PROCEEDINGS

OF THE

MADRAS GOVERNMENT

IN THE

PUBLIC WORKS DEPARTMENT.

IRRIGATION BRANCH,

FOR THE

MONTH OF JANUARY 1892.

Printed by Authority.

MADRAS:
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1892.

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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

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1 Subjects.	2 Dates of Proceedings.	3 Date of Report to Secretary of State for India.	4 Numbers and Dates of previous Proceedings.
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PUBLIC WORKS DEPARTMENT,

IRRIGATION BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT,

FOR THE MONTH OF JANUARY 1892.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 8th December 1891, No. 2179 K.S.

I have the honour to forward, herewith, classified and general abstract estimates, amounting to Rs. 8,100 and 6,300, for excavating Peddapad and Ponukumad channels on the Ellore canal, respectively, and to request that sanction of Government may be obtained for the same.

2. The necessity for these works is explained in the reports which accompany the estimates.

3. There is a provision of Rs. 5,400 for Ponukumad channel in the classified abstract of the Kistna delta, printed with G.O., No. 577 I., dated 1st October 1888, but no provision is made for Peddapad channel; the amount of this latter channel, viz., Rs. 8,100, and the excess on the former, viz., Rs. 900, total Rs. 9,000, can, therefore, be met from the balance for unforeseen works of the delta.

ENCLOSURES.

REPORT to accompany estimate for Peddapad channel, Ellore canal, 30 miles 40 chains.

In Major Campbell's report on the Kistna delta project reviewed in Proceedings of the Madras Government No. 3528 of 22nd December 1876, no irrigation appears to have been anticipated between 30 miles 2 furlongs and 32 miles 3 furlongs of the Ellore canal and no provision was made in the project estimates for head sluice or distributaries from this portion. In the course of time, however, lands have been brought under cultivation by means of temporary sluices at the various points detailed below, and, these being incapable of regulation, this estimate is submitted for sanction :—

			ACS.
30 miles	2 furlongs	box sluice	50
30 ,,	3 ,,	,, ,, ...	50
30 ,,	4 ,,	,, ,, ...	1,334
30 ,,	6 ,,	,, ,, ...	167
31 ,,	1½ ,,	,, ,, ...	80
31 ,,	4 ,,	,, ,, ...	88
32 ,,	3 ,,	tambogies of old Peddapad weir	1,347
		Total ...	3,116

2. The arrangements proposed by Major Campbell are now not applicable, and, after a careful inspection of the present requirements, a re-arrangement is proposed and approved by the Superintending Engineer and this and other estimates now being submitted is the outcome. There will not, therefore, in each particular case be found a specific sanction in the project

estimate. The following estimates have already received sanction and have either been completed or are in progress :—

	RS.
Madepalli channel ...	15,054
Mupparru „ ...	5,215
Watlur „ ...	3,730
Total already sanctioned and appropriated ...	23,999
Add to this the estimate for Kakulapad channel submitted for sanction on 6th November 1891 ...	8,050
Grand total ...	32,049
Provision in revised project estimate (*vide* G.O., No. 577 I., of 1st October 1888) for distributaries, Ellore canal, is ...	55,947
Balance available for appropriation for this and other estimates yet to be submitted ...	23,898

3. The Peddapad channel will consist of a main and two side channels regulated by a head sluice and two side sluices with independent shutters. The size of vents and section of the channel is designed only to supply the lands now being irrigated, the area under the Ellore canal having already exceeded the project area.

	ACS.
4. The main channel will irrigate ...	2,200
The left side channel ...	400
The right „ ...	200
Total ...	2,800

It will thus be seen that some 316 acres of the land detailed in para. 1 are not provided for. The reason of this is that water would have to be conveyed across the drainage outlet at 32 miles 3 furlongs and it is thought better to bring this area under the Gogulapad sluice lower down the canal.

5. The estimate amounts to Rs. 8,090, which is about Rs. 2–14–0 per acre irrigated. This is not excessive but would have been much less were it not necessary, owing to the heavy fall of the country in the direction of the channel, to provide four masonry drops. Four masonry field sluices are also provided in the length of the main channel which is not usually done in such estimate as this.

6. The plan will show all necessary detail, such as the manner in which the water will be supplied to existing bothi channel, so as to disarrange the present state of things as little as possible. The velocity has been kept not higher than 1·8 feet per second as the earth in this neighbourhood will not stand a higher velocity.

7. Early sanction is requested to enable the work to be carried out during next closure of canals.

(Signed) W. JOPP,
Ex. Engr., Eastern division, Kistna.

2nd December 1891.

REPORT to accompany estimate for Ponukumad channel, 17 miles 72 chains.

In the original project estimate a channel is proposed to take off at 18 miles, right bank, Ellore canal, for 1,353 acres and is called Ponukumad channel. At 17 miles 6½ furlongs there is now in existence a masonry sluice known as the Avatapalli sluice, but it is much out of order and quite unsuitable. There is no distributary channel from it, the property of Government. The channel which now runs from it is scoured out very deep and there is much difficulty in supplying water to the higher lands. There is thus much waste. The estimate now submitted for sanction provides for supplying water to the lands now being cultivated as detailed below :—

	ACS.
From 17 miles 6½ furlongs, Avatapalli sluice ...	1,246
„ 18 „ 2½ „ Palmyra spout ...	150
„ 18 „ 5 „ Atkurn palmyra spout ...	295

2. The amount of estimate is Rs. 6,300 and can be met from the provision made in the revised project estimate printed with G.O., No. 577 I., of 1st October 1888 (Rs. 55,947). The

appropriations against this already amount to Rs. 23,999 and in addition estimates have already been sent in for sanction as below :—

	RS.
Kakulapad channel	8,050
Peddapad ,, ...	8,090

3. The Ponukumad channel will consist of a main and side channels regulated by independent vents. The size of vents and of channels is designed of size sufficient only for the present area irrigated :—

	ACS.
The main channel will irrigate	1,020
The left side channel	200
The right ,, ...	400

Two masonry drops will be required to counteract the heavy fall of the country in the direction of the channel. The plans will show all the necessary details.

(Signed) W. JOPP,
Ex. Engr., Eastern division, Kistna.

2nd December 1891.

ESTIMATE form—Abstract—Classified.

Sub head.	Names of works.	Amount of estimate for individual work.	Total of sub heads.	Total for each canal or distributary.	Total of each main head.
1	2	3	4	5	6
	MAJOR WORKS (CONSTRUCTION).	RS.	RS.	RS.	RS.
	49. IRRIGATION.				
	Kistna Delta System.				
	Eastern Section.				
	I. Works.				
	Ellore Canal.				
	(3) Distributaries.				
	Peddapad Channel.				
B. Land ..	1. Compensation for land	830	830		
C. Works ..	2. Head sluice	2,050			
	3. Drop No. 1 at 0 mile 3 furlongs	400			
	4. ,, ,, 2 at 0 ,, 6 ,, ...	400			
	5. ,, ,, 3 at 1 ,, 3½ ,, ...	370			
	6. ,, ,, 4 at 1 ,, 5 ,, ...	350			
	7. Four field masonry sluices	640	4,210		
L. Earthwork ..	8. Excavation	1,560	1,560		
O. Miscellaneous ..	9. Demarcation stones	100	100	6,700	
	Right Side Channel.				
B. Land ..	10. Compensation for land	110	110		
L. Earthwork ..	11. Excavation	48	48		
O. Miscellaneous ..	12. Demarcation stones	12	12	170	
	Left Side Channel.				
B. Land ..	13. Compensation for land	170	170		
C. Works ..	14. Road culvert to Ponukollu village road ..	510	510		
L. Earthwork ..	15. Excavation	500	500		
O. Miscellaneous ..	16. Demarcation stones	50	50	1,230	8,100
	Ponukumad Channel.				
B. Land ..	17. Compensation for land	910	910		
C. Works ..	18 Head sluice	2,150			
	19. Drop No. 1 at 750 feet	350			
	20. ,, ,, 2 at 0 mile 6 furlongs 40 feet ..	240	2,740		

Estimate form—Abstract—Classified—*cont.*

Sub head.	Names of works.	Amount of estimate for individual work.	Total of sub heads.	Total for each canal or distributary.	Total of each main head.
1	2	3	4	5	6
		RS.	RS.	RS.	RS.
	Ponukumad Channel—*cont.*				
L. Earthwork ..	21. Excavation	2,110			
	22. Palmyra spouts	30			
			2,140		
O. Miscellaneous ..	23. Demarcation stones	140			
			140		
				5,930	
	Right Side Channel.				
B. Land ..	24. Compensation for land	50	50		
L. Earthwork ..	25. Excavation	40	40		
O. Miscellaneous ..	26. Demarcation stones	10	10		
				100	
	Left Side Channel.				
B. Land ..	27. Compensation for land	160	160		
L. Earthwork ..	28. Excavation	90	90		
O. Miscellaneous ..	29. Demarcation stones	20	20		
				270	
					6,300

BEZVADA,
20th November 1891.

(Signed) W. JOPP,
Ex. Engr., Eastern division, Kistna.

No. 213 I.

Submitted to Government, with a recommendation, that the estimates, amounting, respectively, to Rs. 8,100 and Rs. 6,300, for excavating the Peddapad and Ponukumad channels, be sanctioned.

CHEPÂK,
19th December 1891.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 4th January 1892, No. 2 I., Public Works.

The estimates, aggregating Rs. 14,400 for the Peddapad and Ponukumad channels on the Ellore canal, Kistna Eastern delta, are sanctioned in lieu of the provision of Rs. 5,400 made for the Ponukumad channel in the classified abstract estimate,* printed in Proceedings of the Madras Government, No. 577 I., dated 1st October 1888, the excess of Rs. 9,000 being met from the balance of the amount reserved for unforeseen works, which will then be reduced to Rs. 2,11,730.

* *Vide* items 403, 414 and 438.

2. This sanction is registered as No. 167 I. of 1891–92.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle, with three enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 2 I.

JANUARY.

Peddapad and Ponukumad Channels

Estimates of Rs. 14,400 for excavating the — on the Ellore canal, Kistna Eastern delta, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 28th November 1891, No. 1117 G.N.

I have the honour to submit, herewith, for early sanction of Government, an estimate of Rs. 490 for constructing an outlet No. 22-A at 17 miles 580 feet, Mahánadi canal, "Other cross drainage works," Rushikulya project.

2. The canal runs in heavy embankment on the left and spreads along the base of steep rocky hills on the right, and therefore the outlet is proposed to be built 50 feet long to pass the required surplus water with 2 feet on the crest and to carry off the sudden discharge of water from the hills into the canal.

3. No provision was made for this outlet in the revised estimates approved in G.O., No. 482 I., dated 4th September 1890. The amount of the estimate is to be met from the lump sum provision made in the sanctioned revised estimates for unforeseen works of the Rushikulya project.

ENCLOSURE.

REPORT to accompany plan of outlet at 17 miles 580 feet, Mahánadi canal.

The canal here runs with a single bank on the left and spreads along the base of steep rocky hills on the right.

2. The drainage area is about 1·25 × ·5 = ·63 square mile, from which, by the formula $D = 675 \sqrt[4]{A^3}$, the discharge will be 472 cubic feet per second.

3. The canal here runs in heavy embankment and it is necessary to provide against a sudden discharge from the hills on the right. An outlet is, therefore, proposed and one 50 feet long will pass the required surplus with 2 feet on the crest. A design and estimate for such an outlet is herewith submitted.

4. The circumstances of the case were submitted to the Chief Engineer for Irrigation and Superintending Engineer on their last inspection and the advisability of the arrangements now proposed recognised.

(Signed) W. C. DEMORGAN,
Ex. Engr., Rushikulya division.

12th November 1891.

ORDER—dated 4th January 1892, No. 3 I., Public Works.

The following estimate, amounting to Rs. 490, for constructing an outlet No. 22-A at 17 miles 580 feet, Mahánadi canal, is sanctioned from the balance of

the amount reserved for unforeseen works of the Rushikulya project, which will then be reduced to Rs. 77,457 :—

Famine Relief and Insurance.
35. Protective Irrigation Works.
Rushikulya Project.
I. Works.
(2) Main Canals and Branches.
F. (1) Other Cross Drainage Works.

	RS.
Constructing an outlet No. 22-A at 17 miles 580 feet, Mahánadi canal, estimate	490

2. This sanction is registered as No. 168 I. of 1891–92.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, I Circle, with two enclosures.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 3 I.

JANUARY.

Outlet

Estimate of Rs. 490 for constructing an — No. 22-A at 17 miles 580 feet, Mahánadi canal, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 28th November 1891, No. 472 G.L.

I have the honour to submit, herewith, the third application for additions and modifications of allotments and to request that you will be so good as to obtain the sanction of Government to the additions and modifications proposed therein.

ENCLOSURE.

THIRD application for additions and modifications of allotments for irrigation works for 1891–92.

Item number.	Division.	Main and sub heads.	Names of works.	Existing grant.	Modification of allotments applied for.		Modification of allotments proposed.		Remarks.
					Reduction.	Increase.	Reduction.	Increase.	
			42. MAJOR WORKS (WORKING EXPENSES).	RS.	RS.	RS.	RS.	RS.	
			Extensions and Improvements.						
1	Godávari Eastern ..	..	Lump sum	10,849	..	1,151	..	..	This is the balance of the amount applied for in item 2 of the second application printed with G.O., No. 844 I., of 30th October 1891.
2	Western	..	Do.	21,350	..	4,650	..	..	Please see item 3 in the Government Order quoted above.
			Maintenance and Repairs.						
3	Do.	..	Lump sum	1,47,027	..	8,077	..	..	The additional allotment herein applied for is required for dredging above and below Bobberlanka lock and for repairing flood damages. This includes the portion of the amount not yet allotted of item 4 of the second application printed with G.O., No. 844 I., of 30th October 1891.
			Tools and Plant.						
4	Do.	..	Lump sum	4,000	..	1,926	..	..	Required for payment for a second-class iron ballacut, for repairs and carriage of tools and plant, for construction of other ballacuts and for meeting percentage charges of works, debited by Eastern division officer as per G.O., No. 2092 W., of 3rd August 1891. This includes the additional funds Rs. 1,000 applied for in item 6 of the second application printed with the Government Order quoted above.
						15,804			
			PROVINCIAL IRRIGATION.						
			43. MINOR WORKS AND NAVIGATION.						
			Agricultural Works.						
			River Embankments.						
			Original Works.						
			Major.						
5	Western	..	Raising the embankment of Gowtami Godávari from head to junction with the Bank canal in Central section.	..	..	4,418	..	..	The revised estimate for this work has been sanctioned in G.O., No. 794 I., of 14th October 1891. The amount applied for is required to complete the work.
6	Do.	..	Raising embankment of Vainatyam-Godávari L.B. from below Gunnaram aqueduct to Bendamurlanka in Central section.	2,503	1,503	..	..	..	Saving not required.
			Minor.						
7	Do.	..	Fixing boundary stones on Gowtami embankment.	524	449	..	..	..	Work completed; saving not required.
			Repairs.						
	Do.	..	Lump sum	22,000	..	5,000	..	..	The additional allotment is required for repairing flood damages; please see item 7 in the second application printed with the Government Order quoted above.

9	Ganjam	..	Lump sum	5,450	..	4,550	..	..	The additional allotment is required to complete the works already sanctioned and commenced. This includes the amount applied for in item 8 of the second application printed with G.O., No. 844 I., of 30th October 1891.
			Works for which Capital and Revenue Accounts are kept.		1,952	13,968			
			Capital.						
			Original Works.						
10	Ganjam	..	Lump sum	5,300	..	200	..	..	The additional allotment is required to cover payment of land compensation, Ganjam-Gopâlpur canal.
			Revenue Account.						
			Repairs.						
11	Godávari Eastern ..	..	Lump sum	12,171	12,171	..	..	..	Please see G.O., No. 864 I., of 6th November 1891. Please transfer a portion of this surrender to items 16 and 18.
			Works for which neither Capital nor Revenue Accounts are kept, P.W.D.						
			Original Works.						
			Major.						
12	Ganjam	..	Constructing an anicut and head sluice to Godakanalla.	..	..	2,000	..	..	This amount is required for the collection of materials and the commencement of the work in January 1892.
13	Vizagapatam ..	..	Pulaparthi channel head sluice reconstruction.	..	..	2,500	..	..	Please see item No. 9 in the second application printed with G.O., No. 844 I., of 30th October 1891, and also G.O., No. 843 I., of 29th October 1891.
14	Do. ..	..	Flood bank between Varaha river and the channel.	980	..	5,020	..	..	Please see item No. 10 of do. do.
			Minor.						
15	Do. ..	..	Lump sum	3,500	1,000	..	..	..	There are not sufficient sanctioned estimates to work up this grant; hence the surrender.
16	Eastern	..	Do.	3,000	..	4,000	..	..	The additional allotment is required to commence the works already sanctioned.
17	Western	..	Do.	3,300	700	..	..	..	There are not sufficient estimates to work up this grant; hence the surrender.
			Tank Restoration.						
18	Eastern	..	Lump sum	4,000	..	2,500	..	..	Please see remark against item No. 16.
			Repairs.						
			Ordinary.						
19	Eastern	..	Lump sum	15,000	..	7,171	..	..	The additional allotment is required to meet the expenditure already incurred and yet to be incurred on Dumagudem works (*vide* G.O., No. 864 I., of 6th November 1891).
20	Western	..	Do.	5,000	1,100	..	..	..	Please see remark against item No. 17.
			Tank Restoration.						
			Repairs.						
21	Eastern	..	Lump sum	6,000	1,500	..	..	..	The progress on the works under this head is slow owing to available labour having been employed on railway works; please transfer this surrender to item 18.
			Total ..	..	4,300	23,191	..	..	

DOWLAISHWERAM,
28th November 1891.

(Signed) G. D. WYBROW,
Superintending Engineer, I Circle.

No. 216 I.

Submitted to Government.

2. Owing to variations in the current year's budget and revised estimates of revenue from "Major" works, the amounts provided for establishment charges at 10 per cent. on direct receipts collected in the Public Works Department and at 6 per cent. on the irrigation revenue collected in the Revenue Department are Rs. 8,600 more than required as shown below:—

—	ESTABLISHMENT CHARGE AT 10 PER CENT. ON PUBLIC WORKS RECEIPTS.	ESTABLISHMENT AT 6 PER CENT. ON IRRIGATION REVENUE.		NET TOTAL.	
	Increase.	Increase.	Decrease.	Increase.	Decrease.
	RS.	RS.	RS.	RS.	RS.
Godávari delta	350	..	4,800	..	4,450
Kistna do.	400	3,840	..	4,240	..
Pennér anicut	10	..	300	..	290
Sangam do.	40	..	960	..	920
Kurnool-Cuddapah canal	200	1,440	..	1,640	..
Cauvery delta	120	..	7,800	..	7,680
Srivaikuntham anicut	..	..	1,140	..	1,140
Total ..	1,120	5,280	15,000	5,880	14,480
Deduct increase ..	..	..	..	..	5,880
Net decrease ..	..	..	..	..	8,600

This sum may, it is suggested, be appropriated to the Godávari delta as shown below:—

	RS.
Maintenance and repairs—	
Western division	5,426
Establishment	1,248
Tools and plant, Western division	1,926
Total ...	8,600

The total grants for maintenance and repairs and tools and plant in the Godávari Western division will then be Rs. 1,53,534 and Rs. 5,926, respectively.

3. The demands for items 8 and 13 have been fully and those for items 9 and 14 partially provided for in G.O., No. 950 I., dated 14th December 1891, and there are no funds available to meet the demands for items 1, 2, 12 and 16, the surrenders under "43. Minor Works and Navigation" being required for appropriation to meet more urgent demands in other circles. The modifications of allotments for all the remaining items may be sanctioned, the amounts required being met from the reserve at the disposal of Government.

CHEPÂK,
19th December 1891.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 4th January 1892, No. 4 I., Public Works.

The following transfers of funds are sanctioned.

Imperial.

42. Major Works (Working Expenses).

From

	RS.
Godavári delta establishment ...	4,450
Pennér anicut system establishment.	290
Sangam do. do. ...	920
Cauvery delta establishment ...	7,680
Srívaikuntham anicut system establishment	1,140
Total ...	14,480

To

	RS.
Godávari Delta, Western Division.	
Maintenance and repairs	5,426
Establishment	1,248
Tools and plant	1,926
	8,600
Kistna Delta.	
Establishment	4,240
Kurnool-Cuddapah Canal.	
Establishment...	1,640
Total ...	14,480

Provincial.

43. Minor Works and Navigation.

From

	RS.	RS.
Minor Works for which Capital and Revenue Accounts are kept.		
Capital Account.		
Reserve		200
Revenue Account.		
Godávari Eastern Division.		
Dumagudem Canal.		
Maintenance and repairs ...	12,171	
Establishment	2,829	
		15,000
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.		
Ordinary Works.		
Vizagapatam.		
Minor original works ...	1,000	
Godávari Western works ...	700	
Do. do. repairs ...	1,100	
		2,800
Tank Restoration Works.		
Godávari Eastern repairs ...	1,500	
		1,500
Agricultural Works.		
Godávari Western Division.		
Vainatyam-Godávari L. B. below Gunnaram aqueduct to Bendamurlanka in the Central section	1503	
River embankments—		
Minor original works ...	449	
Reserve—		
Minor original works ...	2,466	
		4,418
Total ...		23,918

To

	RS.	RS.
Minor Works for which Capital and Revenue Accounts are kept.		
Capital Account.		
Ganjam-Gopálpur Canal.		
Land compensation		200
Revenue Account.		
Reserve—		
Maintenance and repairs	4,929	
Establishment	1,133	
		6,062
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.		
Ordinary Works.		
Godávari Eastern Division.		
Repairs	7,171	
Establishment	1,035	
Tools and plant	108	
		8,314
Tank Restoration Works.		
Godávari Eastern—		
Minor original works ...	2,500	
Reserve—		
Repairs	1,750	
Establishment	633	
Tools and plant	41	
		4,924
Agricultural Works.		
Godávari Western Division.		
Gowtami-Godávari from head to junction with the Bank canal in the Central section	4,418	
		4,418
Total ...		23,918

2. Ordered that a copy of these Proceedings be forwarded to the Government of India, for information, with reference to the transfers of funds sanctioned under Imperial, 42. Major Works (Working Expenses).

(Here enter No. 5 I., Public Works, dated 4th January 1892.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, I Circle.
,, ,, ,, II ,,
,, ,, ,, III ,,
,, ,, ,, V ,,
,, ,, ,, VI ,,
,, Examiner, Public Works Accounts.
,, Revenue Department.

ENDORSEMENT—dated 4th January 1892, No. 5 I., Public Works.

Forwarded.

(By Order).

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, Nos. 4, 5 I.

JANUARY.

Funds

Forwarding copy of Proceedings sanctioning certain transfer of —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers:—

Note by the Chief Engineer for Irrigation.

No. 151 I.

With reference to the remarks of the Board of Revenue in its Proceedings, * Mis. No. 2115, dated 19th June 1889, about the effect on the Váyalúr salt pans of the alterations and improvements to the Buckingham canal at the place which are now approaching completion, I would first say that it is undoubtedly to be regretted that the Board was not consulted when the arrangements were decided on some years ago.

* Transferred to this department with G.O., No. 3904, dated 24th June 1889.

2. One of the channels from the canal into the factory has already, with the permission of the Salt department, been closed, and it is absolutely necessary that the other should also be closed in times of flood if the very costly improvements of the canal between the Ennore and Chintamani backwaters lately carried out are not to be rendered ineffective.

3. It is however equally certain that some arrangement must be made to prevent serious hindrance to the salt traffic; the supply of brine to the pans does not, it is believed, depend on communication with the canal.

4. I suggest the following four alternative arrangements in the order in which I would recommend them and in the order of their cost, the first being least:—

(1) Make the salt storage platform along the back of the canal bank, so that from it salt could be loaded directly into boats in the canal.

(2) Put up the bank across the channel every year on 1st October and remove it on 1st January.

(3) Make a new channel from the present one to the backwater, along which before the improvements all the traffic used to pass and along which the salt boats could now go to the Ennore backwater and there enter the present line of canal.

(4) Construct flood-gates 15′ wide at the junction of the salt channel with the canal.

(Signed) H. E. CLERK,
for Chief Engineer for Irrigation.

1st December 1889.

To the Acting Secretary to Government,
Public Works Department.

No. 5790 C.

Transferred to the Revenue Department with reference to G.O. in that department, No. 3904, dated 24th June 1889.

(Signed) H. E. CLERK,
for Secy. to Govt., P.W.D.

10th December 1889.

Proceedings of the Board of Revenue (Separate Revenue), dated 10th March 1890, Mis. No. 812.

C. S. CROLE, Esq., C.S.

Read—the following papers :—

Endorsement of the Secretary to Government, Revenue Department, dated 30th December 1889, No. 8229.

Reference thereon, dated 14th January 1890.

ABSTRACT.—Referring to the Deputy Commissioner, Central division, for report, note of the Chief Engineer for Irrigation regarding Váyalúr salt pans and requesting him to state which of the four arrangements suggested is, in his opinion, the best.

From W. S. MEYER, Esq., Acting Deputy Commissioner of Salt and Abkári Revenue, Central division, to the Secretary to the Commissioner of Salt, Abkári and Separate Revenue, dated Madras, 19th February 1890, No. 375.

As directed in Board's reference on General Register No. 1148 of 1889, I have the honour to return the note of the Chief Engineer for Irrigation, dated 1st December 1889, No. 151 I., with a sketch map, giving the informations required by the Board, and copy of a memo. by the Inspector, Ennore circle, on the Chief Engineer's proposals. I visited the Váyalúr factory last month with the Inspector and the Assistant Commissioner and concur in Mr. Mitchell's criticisms on the first three of the Chief Engineer's suggestions and in his preference for the fourth.

ENCLOSURE.

From J. M. MITCHELL, Esq., Inspector of Salt and Abkári Revenue, Ennore Circle, to the Assistant Commissioner of Salt and Abkári Revenue, Chingleput Sub-division, dated Kathiwâk, 20th January 1890, No. 45.

* * * * *

Chief Engineer's first proposal.—The proposal to make a platform on the canal bank and store salt there so as to tranship into boats in the canal is, I think, unfeasible for the following reasons :—

(1) We have now on hand the construction of two platforms near the officers' quarters, the earthwork of which is to cost Rs. 8,028–12–0, and the greater part of the work is already done and the whole will be finished before final orders in the case can be received. This money will therefore be thrown away.

(2) The proposed platform will be $1\frac{1}{2}$ miles away from the office, officers' quarters, and peons' lines, and will be difficult of approach during the rains, when the backwater, which is between, is flooded and the bridge damaged, which damage takes place yearly.

(3) Being outside the present factory limits, it would be necessary to have a special guard sanctioned, which would mean, at the very lowest estimation, one petty officer and 12 peons for the whole year. It will not be advisable to put on temporary guards and the permanent staff of the factory is only calculated to work the roster system properly.

(4) We should have to take up land used for wet cultivation, the compensation for which would be heavy and would go to swell the cost of the platform.

Second proposal.—This also I think unfeasible for the following reasons :—

(1) It would mean the entire stoppage of sales between the dates specified or would involve transhipment on the canal bank, which would increase the cost, and it would entail the necessity of shutting up a certain number of boat inside the factory to carry salt from the platform to the land bank. The owners of the boats so shut up would be masters of the situation and could demand their own rates and the consumers would suffer.

(2) The said bank would have to be at least as strong as the other portion of the protective bund and the expenditure would have to be incurred each year. I am not prepared with

figures to say what it will cost, but it is clear that in 15 or 20 years it must cost a good deal and will give no return. The cost of 15 or 20 years with interest might pay for a flood-gate.

Third proposal.—I am not prepared with levels and measurements at this short notice, but the new channel would be about 6 furlongs in length and the average depth of the cutting about $2\frac{1}{2}$ yards. The calculation would therefore be as follows:—

1,320 yards × $7\frac{1}{2}$ yards × $2\frac{1}{2}$ yards = 43,302·5 cubic yards; cost at 1 anna 9 pies per cubic yard = Rs. 2,706–5–0. This channel would require to be cleared annually and would from its exposed position cost about Rs. 500 a year. This would also necessitate the keeping open of the backwater the whole length of the Pulidiwak factory, a very nasty place to work in and very difficult to keep clean. We should have, moreover, to keep the whole length clear throughout the year and not as we do now only during the manufacturing season. I am unable to say what this would cost, but probably not less than Rs. 2,000. I have a scheme in hand for abandoning the backwater opposite Pulidiwak so far as boat traffic is concerned and re-opening the first furlong of channel No. 1, which was abandoned in 1884. By doing this we will avoid the worst part of the backwater work, which is keeping the channel open between the large island of Mulakaijee and mainland and the two small islands a little further north. A large part of channel No. 1 must necessarily be kept open throughout the year and it will be cheaper to re-open the first furlong than to keep the backwater open throughout the year. If we now consider the original cost of Rs. 2,706–5–0 + compensation for cultivated land to be taken up, together with the annual clearing work necessitated thereby, we will find the cost in a few years will amount up to the cost of a flood-gate.

Fourth proposal.—This has been put last as the most expensive. It probably will be so as a first cost, but in the long run will be the most economical. I do not know what the cost of a 15-feet flood-gate will be, but I believe the ordinary flood-gates, 20 feet opening, cost about Rs. 20,000 and we may set the smaller one down at Rs. 15,000. I have shown above that the excavation of the new channel will cost about Rs. 2,700, or, say, with compensation for land, about Rs. 3,000. The cost of keeping this channel clear and of clearing the backwater leading up to it will be about Rs. 2,000, or in other words the gate will be paid for in six years. The interest on Rs. 15,000 at 5 per cent. will be Rs. 750 per annum, while the expense of keeping channels clear will be Rs. 2,000 per annum and this Rs. 2,000 would have to be paid in cess by the Váyalúr licensees, who are already heavily handicapped as compared with the other factories owing to the upkeep of the flood bank.

* * * * * *

Resolution—dated 10th March 1890, Mis. No. 812.

A copy of the Deputy Commissioner's letter read above, together with its enclosure, will be submitted to Government with reference to Revenue Department endorsement No. 8229, dated 20th December 1889, the enclosure to which is herewith returned. The Board concurs with the Inspector and the Deputy Commissioner in considering that the fourth arrangement proposed by the Chief Engineer for Irrigation, viz., constructing flood-gates at the junction of the salt channel with the canal, though requiring a larger initial outlay, will be more satisfactory and more economical in the long run than any of the other three plans.

(True Copies and Extract.)

(Signed) EDMUND MILLETT,
Assistant Secretary.

No. 2049, Revenue.

Transferred to the Public Works Department.

FORT ST. GEORGE,
26th March 1890.

(Signed) C. A. GALTON,
Secretary to Government.

Memo. to the Superintending Engineer,	II Circle,	dated	1st May 1890,	No.	15 B.C.
Letter from the ,, ,,	II ,,	,,	25th Mar. 1891	,,	340 ,,
Memo. to the ,, ,,	II ,,	,,	27th May ,,	,,	38 ,,

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 28th October 1891, No. 354 B.C.

I have the honour to forward, herewith, plans, estimate, &c., amounting to Rs. 12,600, for constructing flood-gates across Váyalúr salt pan channel at its junction with Buckingham canal, prepared in accordance with the instructions contained in your memo. No. II/38 B.C., dated 27th May 1891, and to request that sanction of Government may be obtained for the same from the provision for unforeseen works of the Buckingham canal.

Memo. to the Superintending Engineer, II Circle, dated 12th Nov. 1891, No. 78 BC.
Letter from the ,, ,, II ,, ,, 20th ,, ,, ,, 397 B.C.

No. 209 I.

Submitted to Government, with the recommendation, that, with reference to the Proceedings of the Board of Revenue, Mis. No. 812, dated 10th March 1890, sanction may be accorded to the estimate, amounting to Rs. 12,600, for constructing flood-gates across the Váyalúr salt pan channel at its junction with the Buckingham canal, received from the Superintending Engineer, II Circle, with his letter No. 354 B.C., dated 28th October 1891, the amount being met from the provision for unforeseen works of the Buckingham canal.

CHEPÂK,
12th December 1891.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 4th January 1892, No. 6 I., Public Works.

The following estimate is sanctioned from the provision for unforeseen works of the Buckingham canal, which will then be Rs. 1,83,690:—

43. Minor Works and Navigation.
Minor Works for which Capital and Revenue Accounts are kept.
Buckingham Canal.
Capital Account.
2. Main Canals and Branches.
I. Navigation Works.

	RS.
Flood-gates across Váyalúr salt channel at its junction with the Buckingham canal, estimate	12,600

2. This sanction is registered as No. 169 I. of 1891–92.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, II Circle, with enclosures.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 6 I.

JANUARY.

Flood-gates across Vayalur Salt Channel

Estimate of Rs. 12,600 for constructing — at its junction with the Buckingham canal, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 3rd December 1891, No. 1126 G.N.

I have the honour to submit, herewith, a revised estimate, amounting to Rs. 2,630, together with a comparative statement for constructing an under-tunnel No. 15 at $22\frac{1}{16}$ miles, Rushikulya canal, and to request that you will be so good as to obtain the early sanction of Government to the same.

2. The original estimate (Rs. 2,425) for the work was sanctioned in G.O. No. 482 I., dated 4th September 1890, but in accordance with your instructions the submission of the above revised estimate is found necessary on account of (1) substitution of brick archwork instead of surki concrete arch; (2) plastering intrados of arch with Portland cement in lieu of surki cement; (3) increase in the quantity of rubble masonry in ordinary mortar.

3. The work according to the revised estimate has been ordered to be proceeded with in anticipation of sanction of Government. The excess Rs 200 over the original estimate will be met from the lump sum provision made for unforeseen works in the Rushikulya project.

4. A sum of Rs. 4,000 has been provided for this work in the statement of component works submitted to you with my letter, No. 703 G.N., dated 22nd August 1891.

ENCLOSURE.

REPORT to accompany an estimate for constructing under-tunnel No. 15 at $22\frac{1}{16}$ miles, Rushikulya canal.

	RS.
Amount	2,630

An estimate, amounting to Rs. 2,425, was sanctioned by the Superintending Engineer—*vide* his letter, dated 4th July 1890. In compliance with orders of the Chief Engineer for Irrigation, brick archwork has been substituted for surki concrete arch, and to this the excess requiring sanction is principally due.

2. Early sanction is solicited as the foundations are excavated and work may be commenced.

DEVALAPALLI,
13th November 1891.

(Signed) W. C. DEMORGAN,
Executive Engineer.

ORDER—dated 4th January 1892, No. 7 I., Public Works.

The following revised estimate, amounting to Rs. 2,630, for constructing under-tunnel No. 15 at $22\frac{1}{16}$ miles on the Rushikulya canal, is sanctioned in lieu of the provision of Rs. 2,425 made for the work in the revised estimate for the Rushikulya project printed in Proceedings of the Madras Government, No. 482 I., dated 4th

September 1890, the excess of Rs. 205 being met from the balance of the amount reserved for unforeseen works, which will then be reduced to Rs. 77,252 :—

Famine Relief and Insurance.
35. Protective Irrigation Works.
Rushikulya Project.
I. Works.
(2) Main Canals and Branches.
F (1) Other cross drainage works.

	RS.
Constructing under-tunnel No. 15 at 22 1/6 miles, Rushikulya canal. Estimate	2,630.

2. This sanction is registered as No. 170 I. of 1891-92.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle, with three enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 7 I.

JANUARY.

Under-tunnel No. 15 on Rushikulya Canal

Revised estimate of Rs. 2,630 for constructing —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 28th November 1891, No. 1116-G.N.

I have the honour to submit, herewith, a revised estimate, amounting to Rs. 7,670, together with a comparative statement for constructing an under-tunnel No. 17 at 26 miles, Rushikulya canal, and to request that you will be so good as to obtain the early sanction of Government to the same.

2. The original estimate for this work was sanctioned in G.O. No. 466 I. of 29th August 1890, for Rs. 9,740. In the revised estimate brick arches are allowed in lieu of concrete. By allowing a head of 4 feet of water above the work, the area of the vents has been slightly reduced.

ENCLOSURE.

REPORT to accompany estimate for constructing under-tunnel No. 17 at 26 miles, Rushikulya canal.

	RS.
Amount	7,670

In G.O. No. 466 I., dated 29th August 1890, an estimate, amounting to Rs. 9,740, was sanctioned for this aqueduct. In consequence of the Chief Engineer for Irrigation's instructions to substitute brick for concrete arches, a revised design is submitted. There will be no danger in allowing a head of 4 feet, as the site of the under-tunnel is at a distance from the hills and the water has a large flat area to spread over. The square area of vents is therefore reduced, and with other modifications the estimate has been reduced to Rs. 7,670. The difference, Rs. 2,070, may be added to the balance for unforeseen works.

(Signed) W. C. DEMORGAN,
Executive Engineer.

29th October 1891.

ORDER—dated 4th January 1892, No. 8 I., Public Works.

The following estimate, amounting to Rs. 7,670, for constructing under-tunnel No. 17 at 26 miles on Rushikulya canal is sanctioned in lieu of the provision of Rs. 9,740 made for the work in the revised estimate for the Rushikulya project, printed in Proceedings of Madras Government, No. 482 I., dated 4th September 1890, the saving of Rs. 2,070 effected by the present estimate being added to the balance

of the amount reserved for unforeseen works, which will then be increased to Rs. 79,322.

Famine Relief and Insurance.
35. Protective Irrigation Works.
Rushikulya Project.
I. Works.
(2) Main Canals and Branches.
F (1) Other cross drainage works.
Constructing under-tunnel No. 17 at 26 miles, Rushikulya canal.

	RS.
Estimate	7,670

2. This sanction is registered as No. 171 I. of 1891-92.

(True Extract.)

(Signed). G. T. WALCH,
Joint Secy. to Govt., P. W. D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, 1 Circle, with four enclosures.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 8 I.

JANUARY.

Under-tunnel No. 17 on Rushikulya Canal

Estimate of Rs. 7,670 for constructing —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 2nd November 1891, No. 1001 G.N.

I have the honour to submit, herewith, the following re-revised estimates and plans for the Galleri anicut and head works connected with the Rushikulya project, and request that you will be so good as to obtain the sanction of Government to the same.

2. The present revision of the estimates is due to the increase in height of the head and scouring sluices and of the parapet wings, &c., as the floods of November 1889 rose in the river 3·45 feet higher than the flood recorded by Major Beckley. The left bank of the Galleri river has been slightly scoured out, and, in order to bring the left wing into undisturbed earth, the length of the anicut is proposed to be increased by 20 feet:—

	RS.
One anicut across Galleri river near Sarasamal	15,800
" scouring sluice of Galleri head works near Sarasamal	5,080
" head sluice to Galleri head works near Sarasamal ...	11,500
" square well for Galleri river head works near Sarasamal ...	30

No. 207 I.

Submitted to Government with the recommendation that sanction may be accorded to the estimates slightly altered in this office, amounting to Rs. 32,800, as shown below:—

	RS.
Galleri anicut	15,800
" scouring sluices	5,200
" head sluice	11,800
Total ...	32,800

CHEPAK,
12th December 1891.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 4th January 1892, No. 9 I., Public Works.

The revised estimates, amounting to Rs. 32,800, for the Galleri anicut scouring and head sluices of the Rushikulya project are sanctioned, the excess of Rs. 2,300 over the amounts provided for the works in the revised estimates of the project, printed in

Proceedings of Madras Government, No. 482 I., dated 4th September 1890, being met from the balance of the provision for unforeseen works which will then be Rs. 77,022.

2. This sanction has been registered as No. 172 I. of 1891–92 and classified as shown below :—

Imperial.
35. Protective Works, Irrigation.
Rushikulya project.
(1) Head works.
Mahánadi Section.
C. Works.

	RS.
Galleri anicut	15,800
" scouring sluices	5,200
" head sluice	11,800
Total estimate ...	32,800

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle,
with fourteen enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 9 I.

JANUARY.

Rushikulya Project

Revised estimates of Rs. 32,800 for the Galleri anicut scouring and head sluices of the —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

From C. VINCENT, Esq., Under Secretary to the Government of India, Public Works Department (Civil Works—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Calcutta, the 20th November 1891, No. 236 I.

With reference to correspondence ending with your No. 789 I., dated the 13th October 1891, I am directed to say that the Government of India is pleased to authorise the capital outlay of Rs. 55,253 incurred in previous years in improving the Kalingaroyen channel being added to the estimate for further improvements and extension of the channel sanctioned in Secretary of State's Despatch, No. 3, Public Works, of 29th January 1891, for Rs. 8,71,000.

2. According to the revenue account of the channel the gross revenue up to end of 1890–91 amounts to Rs. 3,03,927 and the working expenses to Rs. 4,67,168, showing a net deficit of Rs. 1,63,241. I am to state that the revenue account should be charged with this loss as also with the charge for interest on the old capital outlay from the date of the commencement of the works in accordance with the rules contained in paragraph 176-A of Public Works Department Code, Volume II, Chapter XV.

ORDER—dated 4th January 1892, No. 10 I., Public Works.

Communicated to the officers concerned for information and guidance.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, IV Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 10 I.

JANUARY.

Kalingaroyen Channel

Letter from the Government of India authorising the capital outlay of Rs. 55,253 incurred in previous years in improving the —being added to the estimate for further improvements and extension of the channel, communicated to officers concerned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. P. DAVIDSON, Esq., Executive Engineer, South Arcot Division, to the Superintending Engineer, V Circle, dated Cuddalore, 8th December 1891, No. 733.

In acknowledging your endorsement No. 727 S.A., dated 3rd December 1891, with regard to the additional grant required for the Tengal odai anicut, I have the honour to inform you that I am not in a position to surrender Rs. 2,000 from the Minor Works Capital and Revenue Accounts not kept grant of this division.

2. The original grant under this head was Rs. 17,000 and this was distributed as follows in the division :—

	RS.
Chidambaram	4,000
Vriddháchalam	2,000
Tindivanam	8,000
Head-quarters	3,000

and the outlay up to end of November against each sub-division has been—

	RS.
Chidambaram	743
Vriddháchalam	1,133
Tindivanam	2,790
Head-quarters	1,692
or a total of Rs. ...	6,358

3. This figure represents work actually paid for, but there is a further unbooked expenditure represented by materials collected, work not measured, and 10 per cent. deductions, which would raise the above sum to Rs. 8,000 approximately; in G.O., No. 680 I., of 28th August 1891, Rs. 3,588 have already been withdrawn, reducing the available allotment under this head to Rs. 13,412, there is therefore at the present time only a sum of Rs. 5,000 odd remaining to be spent and to utilize this all arrangements have been made.

4. During November the expenditure under this head was Rs. 1,500, and this will be much exceeded in January, February and March.

5. The transfer of Rs. 2,000 to meet the Tengal odai anicut excess will necessitate my stopping works now in progress, and to some extent breaking faith with contractors, I would therefore suggest that this sum be provided by transfer from the allotment of Rs. 6,000 for Moruttu channel.

6. The estimate for Moruttu channel extension is not yet sanctioned, and unless sanctioned by the 10th January 1892, I must surrender the entire sum allotted, and even if sanctioned by that date, the allotment of Rs. 6,000 cannot, I am afraid, be fully utilized.

No. 460 E.I.

Submitted, in original, to the Chief Engineer for Irrigation, with reference to para. 3 of G.O., No. 885 I., dated 16th November last.

2. If funds are not available to meet the present demand for Tengal odai anicut, a sum of Rs. 2,000, as suggested by the Executive Engineer, may be transferred from the existing allotment of Rs. 6,000, sanctioned for the Moruttu channel extension.

(Signed) D. McN. CAMPBELL, Major, R.E.,
Superintending Engineer, V Circle.

15th December 1891.

ORDER—dated 4th January 1892, No. 11 I., Public Works.

The following transfer of funds is sanctioned :—

Provincial.
43. Minor Works and Navigation.

From		*To*	
Minor Works for which Capital and Revenue Accounts are kept.	RS.	Minor Works for which neither Capital nor Revenue Accounts are kept— Public Works Department.	
Revenue Account— South Arcot Division.		Ordinary Works— South Arcot Division.	RS.
Shatiatope anicut system	...	Tengal odai anicut	1,976
Extensions and improvements ...	...	Establishment	454
Moruttu channel improvements ...	2,000	Tools and plant	30
Establishment	460		
Total ...	2,460	Total ...	2,460

2. The existing grant of Rs. 4,000 for improving the Moruttu channel or Rupees 4,920, including establishment charges, will be considered to have been transferred from Revenue to Capital Account under which head the estimates for improving the channel were sanctioned in G.O., No. 920 I., dated 30th November 1891.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 11 I.

JANUARY.

Funds

Sanctioning the transfer of certain — in the V Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From Major C. B. HENDERSON, R.E., Executive Engineer, Tanjore Division, to the Superintending Engineer, V Circle, dated Tanjore, 28th November 1891, No. 4485.

I have the honour to forward herewith, for perusal and return, Tanjore Collector's letter, No. 8711, dated 26th instant. I also send the plan and estimate referred to.

2. I am not aware that the right to interfere with the waterway of sluices in this delta has ever been established in a court of law; the point is a very important one, and the sooner it is settled the better.

3. My proposals are described in the report attached to the estimate, and as they may give rise to a suit against Government, I think that, before they are carried out, the matter should be brought to your notice.

4. In this particular case there is no doubt that the sluices draw off more water than the lands under them require, and the sluices lower down the channel are therefore deprived of their proper supply.

REPORT to accompany the estimate for improving sluices in Pudumanniar.

	RS.
Amount	130

As there are frequent complaints of short supply for the irrigation of the villages at the tail end of Pudumanniar, and as some of the sluices in the upper reaches of the river draw off much more water than their share, it is very necessary to reduce the vents of the overdrawing sluices in the interests of the said tail end villages. It is therefore proposed in the accompanying plan and estimate to reduce the vents of such overdrawing sluices, so that the reduced vents may be strictly in proportion to the extent of lands to be supplied by them. The reduced vents are calculated to supply the lands under them at the rate of 3 cubic yards per hour per acre and with a minimum head of 3 inches. This estimate is prepared with special reference to the Collector's letter No. 813, dated 5th February 1891, to the address of the Executive Engineer.

(Signed) T. T. RAGAVACHARI,
Sub-Engineer.

13th October 1891.

No. 442 E. I.

Forwarded to the Chief Engineer for Irrigation for favour of opinion.

2. I consider that the work of reducing the size of the vents of the sluices that draw off too much water should be carried out, and if the ryots bring a case against Government, it will be all the better, as the question of whether Government can interfere with existing sluices will be finally settled.

(Signed) D. McN. CAMPBELL, Major, R.E.,
Superintending Engineer, V Circle.

1st December 1891.

ORDER—dated 4th January 1892, No. 12 I., Public Works.

The execution of the proposed improvements to the sluices of the Pudumanniar, a distributary of the Cauvery delta system, is approved. The estimate for the work, amounting to Rs. 130, may be sanctioned by the Superintending Engineer, as the amount is within the limit of his power of sanction.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 12 I.

JANUARY.

Pudumanniar Sluices

The execution of the proposed improvements to the —, a distributary of the Cauvery delta system, approved, and the estimate of Rs. 130 for the work returned to the Superintending Engineer, V Circle, for sanction.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 9th December 1891, No. 1617 G.D.

I have the honour to submit, herewith, an application for transfer of allotments from Minor to Major Works, Tank Restoration Scheme, Godávari Western division, and to request that the same may be sanctioned. The submission of this application is rendered necessary, as the Examiner of Public Works Accounts states that allotments should be separately given for Major Works sanctioned.

ENCLOSURE.

SUPPLEMENTAL third application for additional, or modification of, allotments in the Godávari Western division, I Circle (*vide* Chief Engineer's Circular No. 14 G., dated the 4th April 1884).

Financial budget and departmental heads, &c.	Government Order in which sanctioned item number in budget.	Works.	Amount of estimate.	Outlay to end of previous year.	Original grant for current year.	Existing grant for current year.	Proposed. Increase.	Proposed. Reduction.	Amount at which grant for work will stand after reduction or increase.
		Major Work.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Minor Works and Navigation for which neither Capital nor Revenue Accounts are kept, Public Works Department (Tank Restoration).	Register No. $\frac{77\ T}{W.G.}$ of 1890–91.	Constructing a weir and sluice to Gokavaram Pedda tank.	3,470	..	..	..	2,700	..	2,700
		Minor original works ..	..	..	3,100	5,100	..	2,700	2,400

9th December 1891.

(Signed) G. D. WYBROW,
Superintending Engineer, I Circle.

ORDER—dated 4th January 1892, No. 13 I., Public Works.

The transfer of funds proposed by the Superintending Engineer is sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 13 I.

JANUARY.

Funds

Sanctioning the transfer of certain — in the Godávari Western division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 8th December 1891, No. 515-N.L.

With reference to para. 3 of G.O. No 258 I. of 17th March 1891, I have the honour to inform you that the shrotriemdars of Brahmanakraka Krakamna tank having requested the Collector a concession for the payment of their contribution of Rs. 1,282 being made by instalments, the Collector has consented to accept payment in three equal annual instalments as was done in former years, and to request that sanction of Government may be obtained for granting this concession under para. 1341 of Public Works Code.

2. In anticipation of sanction of Government, I have authorized the Executive Engineer to put the work in hand.

ORDER—dated 4th January 1892, No. 14 I., Public Works.

The concession to pay the contribution in three equal instalments is sanctioned; the dates for payments will be fixed by the Collector.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, II Circle.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 14 I.

JANUARY.

Brahmanakraka Krakamna Tank

The shrotriemdars of — permitted to pay their contribution of Rs. 1,282 in three equal instalments, the dates for payments being fixed by the Collector.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

Endorsement of the Superintending Engineer, V Circle, dated 11th December 1891, No. 456 E.I.

ENCLOSURE.

43. MINOR WORKS AND NAVIGATION.

STATEMENT of surrenders and demands.

Name of work.	Existing grant.	Outlay up to end of October 1891.	Balance of grant.	Amount of surrender.	Amount required.	Remarks.
1	2	3	4	5	6	7
IRRIGATION AND NAVIGATION.	RS.	RS.	RS.	RS.	RS.	
WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.						
Maintenance and Repairs.						
Lower Coleroon anicut system.	15,000	7,675	7,325	2,000	..	Balance of grant is not required.
Shatiatope anicut system ..	10,000	10,242	−242	..	5,000	Very heavy expenditure against this was incurred on the Manambathan channel, this and the flood damages make the additional grant necessary.
Tirukoilûr do. ..	13,000	8,372	4,628	..	3,000	Required to meet flood damages.
Tank Restoration Scheme Works.						
Repairs	30,000	29,750	250	..	10,000	Grant already expended, and works are making good progress—demand can be fully utilized.

5th December 1891.

(Signed) J. P. DAVIDSON,
Executive Engineer, South Arcot Division.

No. 456 E.I.

Submitted to the Chief Engineer for Irrigation for early sanction or intimation as to the probability of this demand being complied with in full or in part.

11th December 1891.

(Signed D. McN. CAMPBELL, Major, R.E.,
Superintending Engineer, V Circle.

No. 215 I.

Submitted to Government with the recommendation that the following transfers of funds be sanctioned :—

Provincial.
43. Minor Works and Navigation.

From

Minor works for which Capital and Revenue Accounts are kept.

Capital Account.	RS.	RS.
Reserve		1,019
Revenue Account. Lower Coleroon Anicut System. South Arcot Division.		
Maintenance and Repairs ...	2,000	
Establishment	460	
		2,460
Reserve.		
Extensions and Improvements	195	
Maintenance and Repairs ...	4,949	
Establishment	1,182	
		6,326
Total ...		9,805

To

Minor works for which Capital and Revenue Accounts are kept.

Revenue Account. Shatiatope Anicut System.	RS.	RS.
Maintenance and Repairs ...	5,000	
Establishment	1,150	
		6,150
Tirukoilúr Anicut System.		
Maintenance and Repairs ...	2,972	
Establishment	683	
		3,655
Total ...		9,805

From

Minor works for which neither Capital nor Revenue Accounts are kept.
Public Works Department.

Ordinary Works. Minor Original Works.	RS.	RS.
Reserve	409	
Establishment	94	
Tools and Plant	6	
		509
Tank Restoration Works. Minor Original Works.		
Reserve	1,475	
Repairs—Reserve	2,907	
		4,382
Agricultural Works. Minor Original Works.		
Reserve	4,753	
Establishment	1,093	
Tools and Plant	71	
		5,917
Total ...		10,808

To

Minor works for which neither Capital nor Revenue Accounts are kept.
Public Works Department.
Tank Restoration Works.
South Arcot Division.

	RS.
Repairs	9,544
Establishment	1,187
Tools and Plant	77
Total ...	10,808

CHEPÂK,
24th December 1891.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 4th January 1892, No. 15 I., Public Works.

The transfers of funds recommended by the Chief Engineer for Irrigation are sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, V Circle.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. Encl.

G.O., 4th Jan. 1892, No. 15 I.

JANUARY.

Funds

Sanctioning certain transfers of — in the V Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. W. MARTIN, Esq., Superintending Engineer, III Circle, to the Chief Engineer for Irrigation, dated Bellary, 9th December 1891, No. 2545.

In reply to your memo. No. III/17 K.R., dated 5th August 1891, in the matter of closing a breach in the bank, Yeldurti tank, Kurnool district, I have the honour to forward the accompanying plans and estimate, amounting to Rs. 7,410, for closing the breach.

2. In regard to para. 4 of your memorandum, the Executive Engineer has not explained whether good clay for puddle is available. I shall call on him to report about this matter and communicate the result to you, but, in the meantime, I think it is advisable to send the papers in their present state.

3. In discussing the questions raised about this tank, it will be convenient to consider separately—

(1) Whether it is advisable to close the breach at all, and (2), in case it is decided to abandon the tank, what arrangement can be made for irrigating the ayacut.

4. With regard to whether it is desirable to close the breach from the particulars given with G.O., dated 31st May 1878, No. 448 I., it seems the bank was breached in July 1875; that the closing of the breach was immediately undertaken, but it gave way in October following, partly owing to the inadequacy of the surplus weir and partly because at the breach site there was spring, which caused saturation of the soil. In G.O., No. 34, dated 5th January 1877, an estimate, amounting to Rs. 10,050, was sanctioned for closing the breach and extending the weir. The weir appears to have been extended and the greater part of the rest of the work carried out before the tank began to receive water at the end of August 1877. As soon as the tank received a small supply, that is, when the water rose to only 5½ feet below F.T.L. and stood about only 4 feet against the bank, a leak under a part of the bank away from the former breach was observed on 31st August, and, on the 1st September, the bank breached. The question now being considered is whether it is desirable to close this breach.

5. The breach, which occurred in July 1875, appears to have been about at 2,400 feet on the longitudinal section against, say, 800 feet, the position of the breach in 1877.

6. There has been some discussion as to whether the soil at the tank is suitable and reliable for closing the breach and whether the bank may not breach at another place if the existing breach is closed. All the officers, who have inspected the tank, agree in considering the soil is not good. In report from the Executive Engineer, Kurnool division, No. 395, dated 29th September 1879, it is stated: "There are some leaks in the bund, but their situation is well known and they can be stopped. The soil is not of the best kind for forming banks, but there are large tanks in other parts of the country on the same kind of soil and they stand very well. I cannot concur in Major Hindle's opinion that the tank is 'rathen all over,' and I do not

advocate its abandonment as a reseroir." In a report accompanying an estimate prepared in September 1879 for closing the breach, it is observed "there are several leaks in the bund between the sluice and the present breach." In his letter No. 330, dated 4th November 1891, the Executive Engineer, Kurnool division, reports as follows regarding the nature of the soil below the surface at the existing breach: "Instead of 10 feet of slush we found 3 feet of sand, then 7 feet of clay and below the clay 5 feet of soudu and below the soudu we came across gravel." If the description of soil under the whole length of the bank is the same as at the existing breach, I think there will be leakage under the bank if the breach be closed, and, judging from the facts that the breach in September 1877 took place at a new position, when there was about only 4 feet of water against the bank, and that it is known "there are several leaks in the bund between the sluice and the present breach," my opinion is that it is not advisable to close the breach, except it should be necessary to provide work for famine labour.

7. In regard to what arrangements can be made to irrigate the ayacut if Yeldurti tank is abandoned from letter No. 330 from the Executive Engineer, Kurnool division, referred to above, it will be seen that Mr. Handcock's proposal to form a new tank is hardly practicable, for (1) the rough estimate amounts to Rs. 1,50,000; (2) that the trial pits made along the line proposed show that the soil is composed of soudu varying in depth from 4½ to 6 feet with sand under it; and (3) that no good soil is obtainable within a reasonable distance for forming a bank, all available earth being soudu. Consequently I think that the proposal to construct a new tank should be abandoned.

8. In para. 3 of his letter, the Executive Engineer points out that constructing anicuts across the streams would not be any appreciable improvement, for there are no springs in the streams capable of keeping up a continual flow of water. Further on he goes into the question of increasing the capacity of Sudapalli-Sudireddi and Bogula tanks and restoring Bingydodi tank, his rough estimate for the three tanks being Rs. 18,000.

9. I am not in favour of improving these tanks, because, from para. 15 of the Executive Engineer's report, it appears that a large portion of the existing ayacut under Sudapalli-Sudireddi and Bogula tanks is not irrigated at all, or, at least, is not usually irrigated although the drainage area of the former is 14·55 and the latter 8·55 square miles. The reason for this, I think, must be either that the rainfall is not often sufficiently heavy to fill tanks or that an unusually large proportion of the rain percolates into the ground and is lost. In these circumstances, I do not think it is possible to carry any work that would be advisable from a financial point of view.

10. Regarding loss of revenue that will result if Yeldurti tank is abandoned and the ayacut not irrigated, in column 8 of revenue particulars furnished by the Collector and accompanying this report it will be seen that, if the tank is restored, 209 acres will be brought under occupation and in column 11 that the revenue will be Rs. 1,044, composed of Rs. 207–8–0 for dry assessment and Rs. 836–15–0 (water-rate); but the Executive Engineer observes in para. 11 of his report that the area of the tank-bed is 600 acres and that the ryots are eager to cultivate the bed and pay a dry assessment of one rupee per acre, so if the tank is abandoned the net loss of revenue will be Rs. 1,044 − 600 = Rs. 444. I do not know whether the ryots will cultivate with dry crops the ayacut, paying dry assessment for it if there is no water for irrigation. Should they, however, pay dry assessment the loss of revenue will be only Rs. 444 − 209 = Rs. 295 per annum.

11. In conclusion, I may inform you that the Collector of Kurnool has asked me for my opinion as to whether famine coolies might be employed on closing the breach in preference to giving them work on roads. In reply, I have informed him that the estimate for closing the breach is not yet sanctioned, nor has it been finally decided that it is desirable to close it, but that, in any case, I considered it is not advisable to employ famine coolies on the work on first starting relief works, for, if the breach be closed, the work should be executed carefully which famine coolies would probably not do at first starting relief works, but that they might be employed on the tank later on in case it is finally decided to close the breach.

ORDER—dated 4th January 1892, No. 17 I., Public Works.

To meet the demand for work for "relief purposes" the following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Kurnool Division.
Repairs.

	RS.
Closing the breach and raising and strengthening the bund of Yeldurti tank, No. 18 of list of works appended to G.O., No. 407 I., dated 6th July 1887, estimate	7,610

2. This sanction is registered as No. 173 I. of 1891–92.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, III Circle, with 25 enclosures.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 4th.

Recd. *Encl.*

G.O., 4th Jan. 1892, No. 17 I.

JANUARY.

Yeldurti Tank, Kurnool District

Estimate of Rs. 7,610 for closing the breach and raising and strengthening the bund of —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers:—

Telegram from the Secretary to the Government of India, Public Works Department, to the Joint Secretary to the Government of Madras, Public Works Department, Irrigation Branch, dated Calcutta, 18th December 1891, No. A. 289.

Government of India letter No. 79 A.I., dated October 26th, 1891. Please state by wire whether additional grant demanded for Periyár project can be utilised this year if allotted now or any portion of it.

Telegram from the Joint Secretary to the Government of Madras, Public Works Department, Irrigation Branch, to the Secretary to the Government of India, Public Works Department, dated 21st December 1891.

Your telegram A. 289, dated 18th. Rs. 80,000 can be utilised on Periyár—65,000 in number one and 15,000 in number two division. Please sanction by wire.

Telegram from the Secretary to the Government of India, Public Works Department, to the Joint Secretary to the Government of Madras, Public Works Department, Irrigation Branch, dated Calcutta, 4th January 1892, No. 3 A.I.

Your telegram 21st ultimo. Additional grant 80,000 sanctioned for Periyár project.

ORDER—dated 7th January 1892, No. 21 I., Public Works.

The additional grant of Rs. 80,000 sanctioned by the Government of India is distributed as shown below:—

	RS.
No. I Periyár division	65,000
„ II „	15,000
Total ...	80,000

2. The Superintendent of Works, No. I Periyár division, and the Superintending Engineer, VI Circle, will submit statements showing the distribution by component works of the additional grant sanctioned.

3. The following deferred telegrams will be sent :—

To the Superintendent of Works, No. I Periyár division.

G.O., 926 I., 4th ultimo. Additional grant Rs. 65,000 sanctioned.

To the Superintending Engineer, VI Circle.

Additional grant Rs. 15,000 sanctioned for No. II Periyár division.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D,

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Superintendent of Works, No. I Periyár division.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 7th.

Recd. *Encl.*

G.O., 7th Jan. 1892, No. 21 I.

JANUARY.

Periyar Project

The additional grant of Rs. 80,000 sanctioned by the Government of India distributed to Nos. I and II Periyár divisions.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

Revised estimates for 1891–92 and budget estimates for 1892–93 of revenue from, and expenditure on, works in the Irrigation Branch.

MADRAS PRESIDENCY. IRRIGATION BRANCH.

STATEMENT No. I.—Revised estimate of revenue and expenditure for 1891-92 compared with the budget estimate of the year.

Revenue.						Expenditure.					
Major heads.	Fund.	Budget estimate, 1891-92.	Revised estimate, 1891-92.	Revised estimate more (+) or less (—) than budget estimate.	Brief explanation of important differences.	Major heads.	Fund.	Budget estimate, 1891-92.	Revised estimate, 1891-92.	Revised estimate more (+) or less (—) than budget estimate.	Brief explanation of important differences.
		RS.	RS.	RS.				RS.	RS.	RS.	
						35. Protective works, Irrigation, construction.	Imperial ..	3,50,000	6,39,500	+ 2,89,500	An additional grant of Rupees 3,51,000 was sanctioned for the Rushikulya project to admit of its works being proceeded with vigorously. The revised estimate is exclusive of Rs 61,500 surrendered in Proceedings of the Madras Government No. 958 I., dated 16th December 1891.
XXIX. Major works, Direct receipts.	Imperial ..	2,36,000	2,70,000	+ 34,000	Increase is due to development of traffic on the Godávari and Kistna canals and extensive use of water from the Kurnool-Cuddapah canal owing to scanty rainfall.	42. Major works (Working expenses)	Do. ..	11,52,000	11,52,000	..	
						43. Minor works and navigation.	Provincial.	37,00,000	39,00,000	+ 2,00,000	The increase is due to the necessity for starting several works for relief purposes and to a large expenditure having been incurred on the Buckingham canal under maintenance and repairs owing to the necessity there has been this year to open and keep open bars.
Do. Portion of land revenue due to irrigation.	Do. ..	50,60,000	48,29,000	—2,31,000	The decrease is attributed to the unfavorable character of the season. The water supply in the Godávari delta was deficient from the middle of April to the middle of July. The supply in the Pennér and Sangam anicut systems is insufficient for second-crop cultivation.	Do. do. ..	Local ..	25,000	26,748	+ 1,748	
						49. Capital expenditure on irrigation works not charged to revenue.	Imperial ..	13,75,000	14,55,000	+ 80,000	The increase is the additional grant which the Government of India has just sanctioned for the Periyár project owing to the favorable season for work.
XXX. Minor works and navigation.	Provincial.	1,25,000	1,40,000	+ 15,000	The increase is chiefly due to development of coal traffic on the Buckingham canal.						

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

5th January 1892.

STATEMENT No. II.—Budget estimate of revenue and expenditure for 1892–93 compared with the revised estimate for 1891–92.

Revenue.						Expenditure.					
Major head.	Fund head.	Revised estimate, 1891–92.	Budget estimate, 1892–93.	Budget estimate more (+) or less (−) than revised estimate.	Brief explanation of important differences.	Major head.	Fund head.	Revised estimate, 1891–92.	Budget estimate, 1892–93.	Budget estimate more (+) or less (−) than revised estimate.	Brief explanation of important differences.
		RS.	RS.	RS.				RS.	RS.	RS.	
XXIX. Major works, Direct receipts.	Imperial ..	2,70,000	2,57,000	−13,000	The large increase of revenue expected in the current year owing to the extensive use of water from the Kurnool-Cuddapah canal consequent on the failure of the south-west and north-east monsoons is not expected to be realised next year.	36. Protective irrigation works, construction.	Imperial ..	6,39,500	*	..	
						42. Major works (Working expenses).	Do. ..	11,52,000	*	..	
						43. Minor works and navigation.	Provincial.	39,00,000	31,50,000	−7,50,000	The decrease is due to the Financial Department having curtailed the assignment for next year apparently to maintain equilibrium between Provincial revenue and expenditure.
Do. Portion of land revenue due to irrigation.	....	48,29,000	50,49,000	2,20,000	The increase is due to an anticipation that next year the season will prove more favorable than the present one.	Do. do. ..	Local ..	26,748	31,000	4,252	
XXX. Minor works and navigation.	Provincial.	1,40,000	1,50,000	10,000	The increase is partly due to development of coal traffic on the Buckingham canal and partly to anticipated growth of revenue from miscellaneous sources.	49. Capital expenditure on irrigation works not charged to revenue.	Imperial ..	14,55,000	*	..	

* Imperial grants will be fixed by the Government of India.

5th January 1892.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

No. 2 I.

Submitted to Government with reference to G.O., No. 3403 W., dated 20th December 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 7th January 1892, No. 26 I., Public Works.

The above statements will be forwarded to the Government of India in manuscript to save delay with reference to the Government of India Resolution No. 186 A.G., dated 6th December 1890.

(Here enter No. 27 I., Public Works, dated 7th January 1892.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineers.
,, the Examiner, Public Works Accounts.
,, the Revenue Department.

ENDORSEMENT—dated 7th January 1892, No. 27 I., Public Works.

Forwarded.

(By Order).

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 7th.

Recd. *Encl.*

G.O., 7th Jan. 1892, Nos. 26, 27 I.

JANUARY.

Budget Estimates

Forwarding to the Government of India the revised estimates for 1891–92 and — for 1892–93 of revenue from, and expenditure on, works in the Irrigation Branch.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

Inspection Notes of the Chief Engineer for Irrigation, Godávari District, 25th November to 8th December 1891.

(1) ANICUT AND HEAD WORKS.

(*a*) The *anicut* appears to be in excellent order and the amount of repairs required in the coming working season is small 37 cast-iron posts have been broken or knocked away; last year 42 were broken and every one of them was of the old pattern, without stengthening web at back. This year the Superintending Engineer will try some wrought-iron posts made out of channel irons joined, or H iron.

(*b*) A considerable hole has been made in the *Dowlaishweram under-sluice* rough stone apron; in replacing this the surface should be kept down to the same level as that of the portion depressed several years ago under somewhat similar circumstances, which has stood well ever since; along the lower edge of the patch to be replaced should be driven a row of country wood piles.

(*c*) The floor and aprons below the *Bobberlanka under-sluices* have not suffered so much as usual and the "run away" from them has been improved by means of a channel which was cut through the sand bank.

(*d*) At the *Vizeswaram under-sluices* there has been considerable disturbance of the apron; in repacking this it will be advisable to keep it down as low as possible without much baling.

(*e*) All the *head sluices* are in good order, but the wooden platforms of the Dowlaishweram and Vizeswaram sluices require some attention and the parapets of the sluices at Bobberlanka and Vizeswaram will have to be raised to suit the raising of the embankments.

(*f*) *Embankments between the branches of the anicut.*—The flood of 2nd October last was within 2 feet of the top of the embankment in connection with the Dowlaishweram branch, and within 9 inches of top of that at the Vizeswaram head works which lie some 5 furlongs down a closed channel from the river. A breach through these embankments would be more serious than a breach in the masonry anicut, as the river, if the banks breached, would easily cut a new deep course for itself which would be far more difficult to deal with than a gap in the mass of stone of which the anicut and its aprons are composed. The Superintending Engineer advocates the raising of these embankments and he is undoubtedly right. Those between the branches of the anicut will be raised* to + 59, whilst that between the Vizeswaram anicut and under-sluices will be raised to + 59 at the anicut wing and slope up to + 60 at the under-sluices, over which and the head sluices and to new lock platform it will be carried at that level, sloping down to + 59 at and over the lock bridge, when it will slope up to the river bank. This will necessitate raising the ends of the anicut wings and raising the iron bridges over the Bobberlanka and Vizeswaram locks and raising parapets of the Central delta head sluices and the Western delta "under" and "head" sluices. Instructions on points of detail about this raising of the embankments are sent to the Superintending Engineer.

* Now + 57.

(*g*) *Head lock at Dowlaishweram.*—This fine work and the river wall in connection with appears in perfect order. The portion of the river wall in front of the Superintending Engineer's house should be coped to level + 57.

(*h*) *Head lock at Bobberlanka.*—This new double second-class lock built in 1889 and opened in April 1890 is a neat good-looking work and there is every reason to believe that it was carefully and well built, but just after the great flood of October, a crack appeared right across the work through the vents in front of the lower gates which shows that by the great head of water during the flood, some small quantity of the underlying sand was removed. In order to prevent any further such movement it is decided to put sheet piling (such as used at the Dowlaishweram lock lower chamber) right across the whole breadth of the work close to the lower bay floor and wings, instructions * connected with which are issued. The approach to this lock though much better than that to the old one is necessarily from its position a difficult one, and everything should be done to make it safe for boats. Horizontal piles should be driven into the slopes at about + 50 from which chains, such as on the Dowlaishweram lock wall, should be festooned down to about + 38, and well-formed bollards should be fixed at about + 53 with their tops above maximum flood level.

* See No. I/132-G.D., dated 4th December 1891.

(*i*) *New double first-class lock at Vizeswaram.*—This work is now almost finished and it was opened on 5th of this month (December). It is of the same general design as the one at Dowlaishweram, but as there was no necessity for the great expedition in building that there was at Dowlaishweram, it is provided with feeding and emptying vents and culverts *round* the gates instead of *in* them. It is a remarkably handsome well-arranged work; it is not too much to assert that no finer work of its class exists in India or elsewhere. It is creditable to all the officers and subordinates connected with it. The Superintending Engineer Mr. Wybrow and the Executive Engineer Mr. Mitford Smith say that much of the credit is due to the Anicut Superintendent D. Ramanah Naidu, who has been in immediate charge of actual execution since the work was commenced.

(*j*) *The river wall* in connection with the work has cracked at the "nose" from some unequal compression of the underlying soil; if any further movement appears piles will have to be driven along its toe as at the Dowlaishweram river wall.

(*k*) *The channel to what is known as the "old loading place" at Dowlaishweram* has so silted up of late years that boats cannot go to the end of the tramway, the loading place, and cranes. It is very desirable that a considerable reserve of stone, say 2,000 cubic yards, should be maintained ready for despatch as near the river mouth of this channel as possible.

(*l*) The left margin of the Gowtami branch of the river for 3 miles below the anicut still requires constant attention; some stone groynes put in the first mile during the last two years or so should be *thoroughly* removed, and the stone used in facing. The knowledge that such groynes do harm and not good in this river was bought, and bought dearly, long ago and should have been remembered.

(2) CENTRAL DELTA.

(*a*) *The breaches in the river banks* on both sides of this delta caused by the high flood were numerous and of considerable size, the worst were in the Vasista left embankment between $12\frac{1}{2}$ and $13\frac{1}{4}$ miles; the first of these, near the mouth of the Katunga drain, should be dealt with by retiring the bank beyond where the ground has been cut up. The *Katunga out-fall sluice* near this place is an old work much shattered, and a new one should be built without delay, allowing for an embankment over it of full width and 4′ 6″ above observed maximum full level, so that there may be no slope down to the work as at present. The places in the river banks which observations at the time of the flood show to be most dangerously low should be at once raised to safety height without waiting for any levels and preparation of sections. Estimates for raising all the river embankments to 4′ 6″ above the observed maximum flood level should follow as soon as possible; where the bank

shows a tendency to slide into the canal, as along parts of the Gunnaram canal, the raising must be done on the river side of the existing bank leaving its top as a berm.

(b) *The "sets" and erosions* along the 150 miles or so of river which enclose this delta are of course numerous and troublesome. By far the worst is the one at *Ramachendrapuram*, left side of the Vasista-Godávari, opposite from 13½ miles to 14 miles of the Gunnaram canal. This has for many years caused anxiety and on account of it the site for the new lock which it was intended to build where the old one was at 14 miles 55 chains was abandoned and the work built at Gopálapuram, about 2½ miles further down. This "set" has encroached much during the last high floods till now at one place it is within 42 feet of the river bank and canal and nearly as close for a length of 2½ furlongs, whilst the depth there is from 40 to 78 feet below low water level, or from 62 to 110 feet below the level of the river berm. Stone facing is under these circumstances not likely to stand as no firm toe can be obtained for it, and we have not the money or appliances available which enable bad "sets" on the Indus to be dealt with at the cost of several lakhs. The Executive Engineer proposed a cut through the opposing sand shoal, about a mile and a quarter long and in some parts at least 15 feet deep even to reach low water level. This would of the size required cost a large sum and there is by no means any certainty that it would be possible to force the river through it; there seems nothing for it but to be prepared for a diversion of canal and river bank and instructions* with reference to this are issued.

* See No. I/130 G.D., dated 30th November 1891.

The other "sets" are being dealt with by stone facing in the way which long experience has shown to answer best on this river, and diversions will be resorted to only when absolutely inevitable. The falling in of the river margins is in all the bad places increased by percolation from the canals which run close to them, and the frequency of the necessity for diversion through valuable land has proved that in both the Godávari and Kistna districts "bank canals" are in the long run very costly, though they are tempting to make because they run on high ground, and the surplus earth from excavation can be used for the river flood embankments.

(c) *Main canal.*—Much sand has travelled through the head sluices into the upper part of this canal which will give a large quantity of work to be done during the closure. There are some extensive slips of the sides due chiefly to the enormous weight of the spoil banks at the places and those banks must therefore be moved back, and for the first two miles or so all fresh spoil must be thrown at the back of the existing banks.

(d) *Gunnaram canal.*—This was much knocked about by the breaches referred to above and will require extensive repairs during the next closure. Its masonry works, as far as seen, are in good order and general maintenance is evidently carefully attended to. The falling gate at the Gopálpuram lock acts well, but the cleading at the back should be arranged so that the loading may be easily got at and adjusted as may be wished, and the gearing winch requires a "pawle" to prevent the dangerous loss of control which now sometimes occurs.

(e) *Gunnaram aqueduct.*—The flood of October went right over this fine old work about 18 inches deep in the middle and from that to 6 inches deep near the ends; the greatest difference of level in the river above and below the work was 2·4 feet. The only damage to the superstructure was the washing off of some of the surface gravel and a little picking up of the concrete of the right tow-path, and some slight injury to the railings. The rough stone flooring in river bed below the work has on the left side of the river been somewhat disturbed and must be repacked; in doing this it will be well to keep the surface down as low as possible taking care of course to make the junctions of the surface of the new and old packing with gradual slopes and not sharp edges. Where the deepest disturbance is, opposite the first bay, it will probably be advisable to put a row or two of piles in the way often done in dealing with troublesome places in the anicut aprons. A reserve of stone should be invariably kept near each end of this work. The flooring put down in the last three years along the front of this aqueduct has added much to its safety.

(f) *The Vridha-Gowtami drain under-tunnel* at 42 miles 45 chains of the Bank canal was considerably injured by the excessive discharge through it resulting

from various breaches in the river bank which threw large quantities of water into its drainage basin; the large "flap" shutters with which the work was fitted to prevent river flood waters from backing up through it, were dashed violently about by the disturbance caused by the discharge under a great head and they tore out their iron standards and injured the masonry; it is decided to replace them by an arrangement of shutters worked by screw gearing; after inspection of the work detailed instructions * are issued on the subject.

* See No. I/131 G.D., dated 2nd December 1891.

(g) The "Ainapuram aqueduct" which carried the large Ainapuram distributary of the Bank canal over the head of the Ainapuram drain was destroyed by the rush of flood waters across the channel. The place was inspected with the Superintending Engineer and the Executive Engineer who both strongly urge the inadvisability of building the expensive work which would be required to replace the destroyed work, as the Ainapuram drain at its head has ceased to be efficient and no aqueduct would provide for the conditions that obtain when the river banks breach. The work will, therefore, not be replaced and the regular drainage of the area which it was supposed to serve will be taken by the Vridha-Gowtami under-tunnel. When, however, breaches occur in the river banks (and it is feared that it will not be possible to make certain that they will never happen) some of the flood waters must find their way across the Ainapuram channel and it will be advisable to *give* them a way rather than that they should *make* it causing great damage to the channel and its banks; for this purpose at some convenient place where the F.S.L. in the channel is but little above ground level, the channel should be carried for 100 yards between masonry side walls instead of earthen banks, the top of the walls being only at F.S.L. and the channel bed between them being paved.

(h) The *Bank canal* and the upper 17 miles of the *Amalapur canal* were inspected and found to be maintained in good order.

(3) THE ELLORE CANAL, WESTERN DELTA, AND COCANADA CANAL, EASTERN DELTA.

These were also inspected but there is nothing in connection with them requiring special notice. They are evidently carefully attended to.

(4) THE AREA OF IRRIGATION.

When the so called "completion estimates" were prepared the expected ultimate area of irrigation was 579,470 acres. As the works were carried out it became evident that this area might be exceeded and when the revised estimates were prepared in 1882, the ultimate expected area was increased to 612,000 * acres (first crop). Year by year the area actually irrigated has gone on increasing till last year 1890–91 it was 631,137 acres of first crop. This area cannot be considerably exceeded without a certainty that in some years it will be impossible to fully supply all the land and there will be disappointment and loss to cultivators; the Superintending Engineer must therefore make proposals, based on the extensive experience now gained, for a new distribution, by reaches of canals, of ultimate areas to which the irrigation is to be *limited*. It appears that the rule which used to obtain that no new "wet" pattas were to be issued without approval by the officers of this department has fallen into disuse and that the Revenue officers now issue such pattas practically to all applicants; such a course cannot but lead to disappointment and trouble and makes all attempt at proper distribution a farce. It is absolutely necessary that such a haphazard, happy-go-lucky system should be at once put a stop to and that every application for conversion of "dry" or "waste" into "wet" cultivation should be submitted to the Executive Engineer of the division concerned for acceptance or rejection, and that it should be submitted not later than the end of the March preceding the "fasli", in which it is wished that the conversion should take effect. In dealing with the applications,

* See para. 4 of note by Chief Engineer for Irrigation with Proceedings of the Madras Government No. 259 I, dated 21st March 1882.

Executive Engineers will be governed by whether the ultimate area has been already attained under the canal, or reach, concerned and by whether the land in question is easily commanded or otherwise. The following remark made in para. 23 of Inspection Notes, Kistna Delta, printed with Proceedings of the Madras Government No. 193 I., dated 24th March 1890, is here also applicable, viz., "the area of the land *commanded* is far in excess of that to which water can with certainty be supplied; we can, therefore, pick and choose the land to be irrigated, and in the interests both of Government and of the cultivators it is advisable that we should do so; we should not, for example, make any attempt to bring under wet cultivation lands lying at the ends of channels near the sea and in low places, where supply and efficient drainage are likely to be difficult, whilst there are lands available higher up the supply and drainage of which can be accomplished with greater ease and certainty."

(Signed) G. T. WALCH.
Chief Engineer for Irrigation.

No. 1 I.

Submitted to Government.

CHEPÂK,
4th January 1892.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 11th January 1892, No. 34 I., Public Works.

Communicated to the officers concerned for information and guidance.

2. Orders will issue in the Revenue Department that all proposals for conversion of waste or dry cultivation into "wet" in the Godávari and Kistna deltas shall be submitted to the officers of the Public Works Department for acceptance or rejection.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " II "
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 11th.

Recd. *Encl.*

G.O., 11th Jan. 1892, No. 34 I.

JANUARY.

Inspection Notes, Godavari district

Orders on the Chief Engineer for Irrigation's —, 25th November to 8th December 1891.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 10th October 1891, No. 1646 K.S.

I have the honour to forward, herewith, the marginally-noted statements of navigation receipts and charges appertaining to the Kistna delta system for the official year 1890–91.

1 comparative statement.
1 statement C.
1 do. C (1).
1 do. A.
1 do. A (1).
1 do. B.
1 do. D.

2. Under receipts there is an increase of Rs. 4,007 over the collections of 1889–90, which were Rs. 3,048 less than those of the previous year, when there was a falling off. The present increase includes Rs. 550, the net earnings of steamer *Alexandra* and a few other items.

3. Under charges the expenditure is greater than that of last year by Rs. 3,518, the main increase being under "Navigation Repairs Proper," as a set of upper gates to Duggirala lock and 3 sets of culvert shutters to the Pedaganjam lock have been specially provided during 1890–91.

ENCLOSURES.

COMPARATIVE statement showing the charges and receipts on account of navigation in the canals of Kistna delta for 1887–88, 1888–89, 1889–90 and 1890–91.

Particulars.	Official year, 1887–88.	Official year, 1888–89.	Official year, 1889–90.	Official year, 1890–91.
Charges.	RS.	RS.	RS.	RS.
Lock establishment	10,480	10,673	10,233	10,212
Direct charges for repairs	22,962	14,557	17,456	22,704
Indirect do.	24,804	27,599	31,148	28,740
Interest on capital outlay	13,701	14,372	15,304	16,003
Total ..	71,947	67,201	74,141	77,659
Receipts.				
License fees for cargo boats	4,843	5,235	3,158	4,275
Do. for passenger boats	3,470	2,964	2,427	2,781
Do. for Government boats	3,070	3,748	3,917	4,035
Do. for staff boats	84	72	72	72
Do. for miscellaneous	207	307	381	889
Tolls on cargo boats .. .. Do. on passenger boats .. .. .. Do. on miscellaneous	16,457	15,170	15,472	16,804
Do. on rafts	2,152	2,767	1,873	1,982
	30,283	30,263	27,300	30,838
License fees for Government floating plant .	..	135	..	..
Rent from staff boats	..	1,193	1,268	1,229
Do. from paddle boat	..	30	9	16
Do. from boat basin	..	70	66	17
Earnings of steamer	..	..	..	550
Total ..	30,283	31,691	28,643	32,650
Add refund of navigation receipts not taken into account by the Examiner of Public Works Accounts	..	..	..	275
Add balance deficient	41,664	35,517	45,498	44,564
Grand total ..	71,947	67,208	74,141	77,489

C.—Statement showing the expenditure on repairs of navigable canals in the Kistna district for 1890–91.

	NAVIGATION REPAIRS PROPER.						REPAIRS TO NAVIGABLE CANALS.						
—	Lock and lock weir repairs.	Navigation buildings.	Clearing tow paths.	Dredging.	Miscellaneous.	Total.	Repairs to canal banks.	Silt clearances in canals.	Repairs to masonry works.	Dredging.	Miscellaneous.	Total.	Total of columns 7 and 13.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Kistna Eastern delta.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
1. Main canal	1,069	19	..	..	..	1,088	..	2,741	224	..	139	3,104	4,192
2. Ellore do.	..	..	1,508	..	..	1,508	..	10,754	1,243	..	..	11,997	13,505
3. Masulipatam canal	2,932	54	2,107	..	..	5,093	..	14,577	191	..	467	15,235	20,328
4. Pamarru junction canal	..	..	..	..	..	..	..	1,195	..	..	..	1,195	1,195
5. Pulleru canal	60	1	362	..	..	423	..	7,413	21	..	..	7,434	7,857
6. Polraz do.	222	9	1,085	..	..	1,316	..	1,543	113	..	..	1,656	2,972
7. Bantumilli canal	252	168	322	..	..	742	..	1,225	4	..	..	1,229	1,971
8. Ryves' do.	..	171	..	..	..	171	..	..	..	..	..	..	171
Total ..	4,536	422	5,384	..	..	10,341	..	39,448	1,796	..	606	41,850	52,191
Kistna Western delta.													
1. Main canal	..	..	313	..	..	313	..	14,071	97	..	855	15,023	15,336
2. Nizampatam canal	3,005	60	700	..	..	3,765	377	2,661	41	..	524	3,603	7,368
3. Bank do.	1,068	4	1,072	..	552	2,696	541	1,879	100	62	1,103	3,685	,381
4. Commamur do.	3,346	161	2,082	..	..	5,589	1,768	18,445	1,368	452	27	22,060	27,649
Total ..	7,419	225	4,167	..	552	12,363	2,686	37,056	1,606	514	2,509	44,371	56,734
Grand total ..	11,954	647	9,551	..	552	22,704	2,686	76,504	3,402	514	3,115	86,221	1,08,925

C (1).—Abstract of statement C.

Names of canals.	Navigation repairs proper in column 7 of statement C.	Repairs to navigable canals, column 13 of statement C.	Proposed length of canal.	Length open to navigation.	Proportion of column 3 chargeable to navigation (*vide* G.O., No. 460 I., dated 6th August 1888). Percentage.	Proportion of column 3 chargeable to navigation. Amount.	Total of columns 2 and 7.
1	2	3	4	5	6	7	8
Kistna Eastern delta.	RS.	RS.	MLS. CHS.	MLS. CHS.		RS.	RS.
1. Main canal	1,088	3,104	0 51	0 51	One-third.	1,035	2,123
2. Ellore do.	1,508	11,997	40 0	40 0		3,999	5,507
3. Masulipatam canal	5,093	15,235	49 7	49 7		5,078	10,171
4. Pamarru junction canal ..	..	1,195	0 40	0 40		398	398
5. Pulleru canal	423	7,434	7 60	7 60		2,478	2,901
6. Polraz do.	1,316	1,656	26 0	26 0		552	1,868
7. Bantumilli canal	742	1,229	26 15	14 20		410	1,152
8. Ryves' do.	171	..	1 0	..		..	171
Total ..	10,341	41,850	151 13	138 18	..	13,950	24,291
Kistna Western delta.							
1. Main canal	313	15,023	13 0	13 0	One-third	5,008	5,321
2. Nizampatam canal	3,765	3,603	27 78	27 78		1,201	4,966
3. Bank do.	2,696	3,685	46 8	46 8		1,228	3,924
4. Commamur do.	5,589	22,060	59 0	59 0		7,353	12,942
Total ..	12,363	44,371	146 6	146 6	..	14,790	27,153
Grand total ..	22,704	86,221	297 19	284 24	..	28,740	51,444

A.—Statement of receipts and charges in the Kistna district navigation for the year 1890–91.

RECEIPTS FOR 1890–91.

Description.	Amount.
	RS.
1. License fees for cargo boats ...	4,275
Do. for passenger boats, first class ...	...
Do. for passenger boats, second class ...	2,781
Do. for Government boats ...	4,035
Do. for staff boats ...	72
Do. for miscellaneous including private and pleasure boats, duplicate license fees.	889
2. Tolls on cargo boats, passenger boats and miscellaneous ...	18,398
3. Rafts	388
	30,838
License fees for Government floating plant	...
Rent from staff boats	1,229
Do. paddle boat	16
Do. boat basin	17
Earnings of steamer	550
Add refund of navigation receipts not taken into account by the Examiner of Public Works Accounts	275
	32,925
Balance deficient	44,564
Total ...	77,489

CHARGES FOR 1890–91.

Description.	Amount.
	RS.
1. Lock establishment	10,212
2. Lock and lock weir repairs ...	11,954
3. Navigation buildings—	
(*a*) Improvements	..
(*b*) Repairs	647
4. Tow path maintenance	9,551
5. Dredging	...
6. Miscellaneous including any charges not appertaining to the above items	552
7. Share of canal maintenance ...	28,740
8. Miscellaneous general charges	...
9. Interest for the year on capital outlay on navigation works at 4 per cent. on Rs. 3,94,818 and at 2 per cent. on Rs. 2,019 as per column IV of abstract of memorandum A (1)	15,833
Total ...	77,489

ABSTRACT OF MEMORANDUM A (1).—Statement showing capital outlay on navigation works proper of the Kistna delta from the year 1870–71 (inclusive).

Sections of delta.	To end of 1889–90.	Outlay in 1890–91.	Total.
	RS.	RS.	RS.
Eastern section	1,37,856	19	1,37,875
Western do.	2,56,962	2,000	2,58,962
Total ...	3,94,818	2,019	3,96,837

B.—Statement showing the revenue obtained in licensing boats in the Kistna delta from 1888–89 to 1890–91.

	1888–89.					1889–90.					1890–91.				
—	Class.	Total number.	Tonnage.	Number of passengers.	Amount of license.	Class.	Total number.	Tonnage.	Number of passengers.	Amount of license.	Class.	Total number.	Tonnage.	Number of passengers.	Amount of license.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					RS.					RS.					RS.
1. License fees for cargo boats	..	95	2,094	..	5,235	..	58	1,291	..	3,158	..	77	1,710	..	4,275
Do. for passenger boats, 1st class	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Do. for do. 2nd do.	2nd.	39	988	2,474	2,964	2nd.	33	809	2,038	2,427	2nd.	37	927	2,339	2,781
Do. for Government boats ..	..	58	1,499	..	3,748	..	60	1,567	..	3,917	..	60	1,567	..	4,035
Do. for staff boats	..	6	..	..	72	..	6	..	..	72	..	6	..	..	72
Do. for miscellaneous including private and pleasure boats, duplicate license fees, &c.	..	25	..	..	307	..	28	..	..	381	..	19	..	..	230
2. Tolls on cargo boats, passenger boats and miscellaneous	..	..	..	..	15,170	..	..	..	..	15,472	..	..	..	..	16,804
3. Tolls on rafts	..	..	..	..	2,767	..	..	..	..	1,873	..	..	..	..	2,641
Total ..	.	..	..	..	30,263	..	..	..	..	27,300	..	..	..	..	30,838
License fees for Government floating plant.	..	..	..	..	135	..	..	..	..	..	..	..	..	..	..
Rent from staff boats	..	..	..	..	1,193	..	..	..	..	1,268	..	..	..	..	1,229
Do. from paddle boat	..	..	..	..	30	..	..	..	..	9	..	..	..	..	16
Do. from boat basin	..	..	..	..	70	..	..	..	..	66	..	..	..	..	17
Earnings of steamer	..	..	..	..	..	..	..	..	..	..	..	..	..	..	550
Add refund of navigation receipts not taken into account by the Examiner of Public Works Accounts	..	..	..	..	..	..	..	..	..	..	..	..	..	..	275
Grand total ..	..	..	..	..	31,691	..	..	..	..	28,643	..	..	..	..	32,925

D.—Memorandum showing the offences against bye-laws during the official year 1890–91 and punishments inflicted.

Nature and description of boats.	Rule Nos. 22 and 23.		Rule No. 27.		Rule No. 20.		Rule No. 32.		Obstructing Government punts.		Bye-laws or rule Nos. 21 and 27.	
	Number of boats.	Number of days stopped.	Number of boats.	Number of days stopped.	Number of boats.	Number of days stopped.	Number of boats.	Number of days stopped.	Number of boats.	Number of days stopped.	Number of boats.	Number of days stopped.
1	2	3	4	5	6	7	8	9	10	11	12	13
Kistna Eastern division.												
Passenger boats	9 K.	5	.. Ticket No. 13655.	.. 3	12 K. Ticket No. 4020	3 6	1,516 G. Ticket No. 10718.	3 5	..	..	..	..
Cargo boats	..	..	Ticket No. 4037.	3		..	..	..	..	..	..	..
Kistna Western division.												
Top boats	..	..	..	..	..	..	..	..	..	..	680 B. 764 B. 393 B. 371 B. 862 B. 471 B. 605 B. 500 B. 196 B. 525 B. 668 B. 822 B. 690 B. 425 B.	10 10 10 10 10 10 10 10 10 10 10 10 10 10
Cargo boat	..	..	..	..	..	..	..	..	..	..	169 0 Toll ticket.	10

10th October 1891.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

Office-note to the Examiner of Public Works Accounts, dated 15th October 1891, No. 255.
,, from ,, ,, ,, 20th ,, ,, ,, 6382.
Memo. to the Superintending Engineer, II Circle, dated 28th Oct. 1891, No. II/148 K.S.
From ,, ,, II ,, ,, 17th Nov. ,, ,, 1992 K.S.
Office-note to the Examiner of Public Works Accounts, dated 21st November 1891, No 302.
,, from ,, ,, ,, 3rd Dec. 1891, No. 7495.

No. 3 I.

Submitted to Government. The navigation receipts of the Kistna delta system realised in 1890–91 amounted to Rs. 32,925, as booked by the Examiner of Public Works Accounts, and not to Rs. 32,650 as shown in the statements received from the Superintending Engineer. The difference (Rs. 275) is reported to be the refund of navigation receipts not taken into account by the Examiner. The Superintending Engineer's statements have been corrected in this office to accord with the accounts.

CHEPÂK,
4th January 1892.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 11th January 1892, No. 35 I., Public Works.

Recorded.

(True Extract.)

(Signed) G. T. WALCH.
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, II Circle.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 11th.

Recd. *Encl.*

G.O., 11th Jan. 1892, No. 35 I.

JANUARY.

Navigation Receipts, Kistna Delta System

Explanation from the Chief Engineer for Irrigation as to certain discrepancies in the figures given by the Examiner, Public Works Accounts, and the Superintending Engineer, II Circle, relative to the —, recorded.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

From J. C. LARMINIE, Esq., Executive Engineer, Coimbatore division, to the Superintending Engineer, IV Circle, dated Coimbatore, 3rd December 1891, No. 6918.

With reference to your endorsement No. 610/C.I., on Irrigation Chief Engineer's memo. No. 1645 T., dated, respectively, 28th and 23rd August 1889, I have the honour to forward a list of irrigation works in the Coimbatore district hitherto classed as "Minor Works, Revenue Department," which are worthy of being treated as Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D. This list has been prepared in consultation with the Collector. The positions of works in the list have been shown on the accompanying index map.

Vide G.O., No. 854 I., of 3rd November 1891.

No. 266 E.I.

Copy submitted to the Chief Engineer for Irrigation, Tank Restoration Scheme, with reference to his memo. No. 1645 T. of 23rd August 1889, with a request that the "Minor Works, Revenue Department," enumerated in the accompanying list and map, may be classified as Minor Works, Public Works Department, and brought on the list of Imperial tanks. The return of the map is requested.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Superintending Engineer, IV Circle.

10th December 1891.

No. 4 I.

Submitted to Government, with a recommendation, that the following additions be authorized in the list of Minor Works for which neither Capital nor Revenue

Accounts are kept, P.W.D., in the Coimbatore district, communicated with G.O., No. 407 I., dated 6th July 1887 :—

Taluk.	Number on the map.	Source of supply.	Name of group or system.	Name of channels.	Name of tanks.	Average cultivation of last five years.		Total of each group or system.	
						Area.	Revenue.	Area.	Revenue.
						ACS.	RS.	ACS.	RS.
Bhaváni ..	1A.	Sittar river ..	Appagudel group.	..	Ennamangalam tank.	114	735	950	3,421
Satyamangalam.	7A.	Bhaváni river.	Isolated ..	..	Ananthasagaram tank.	186	1,598	166	1,598
Erode ..	13A.	Rainfed ..	Sambamadai group.	..	Punchapalatholunu tank.	195	1,613	195	1,613
Coimbatore ..	103	Chinna Noyil river.	Neeli anicut ..	Neeli channel.	..	696	3,091	696	3,091
Do. ..	104	Koonoor river.	Nellithorai anicut.	Nellithorai channel.	..	523	2,831	523	2,831
Do. ..	105	Do. ..	Odanthorai anicut.	Odanthorai channel.	..	1,077	4,318	1,077	4,318

CHEPÂK,
5th January 1892.

(Signed) W. C. LEWIS,
for Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 11th January 1892, No. 37 I., Public Works.

The additions proposed by the Chief Engineer for Irrigation are sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, IV Circle.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 11th.

Recd. *Encl.*

G.O., 11th Jan. 1892, No. 37 I.

JANUARY.

Minor Irrigation Works, Coimbatore District

Certain additions proposed by the Chief Engineer for Irrigation in the list of — for which neither Capital nor Revenue Accounts are kept, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From the Executive Engineer, No. II Periyár division, to the Superintending Engineer, VI Circle, dated 12th December 1891, No. 2296.

With reference to your No. 540 P.R. of 7th December 1891, I have the honour to report that there will be 800 acres under the sluice if the tank at Tannichiem be abandoned. This, it seems, is proposed by the Deputy Collector; otherwise a little more than 100 acres would be irrigated.

2. I think, however, it would be far better to allow these supplemental works to be postponed until the project is completed, for, at present, we have not the time to investigate the matter thoroughly and a small sluice can always be built when the necessity is established.

ENCLOSURE.

REPORT to accompany plan and estimate for constructing an irrigation sluice.

	RS.
Amount of estimate	1,650

This work, which is not provided in the project estimate, is to be built at 11 miles 5 furlongs and 500 feet in the third reach, main channel, to irrigate a strip of land about 884 acres in the Tannichiem village belonging to Ammayanáyakanúr zemindari.

2. The water-rate fixed by the Collector of Madura is from Rs. 4 to 6 an acre, which amounts to Rs. 3,536 and 5,304, respectively. It is also said that about half the area might well be cultivated with two crops and the water-rate for the second one would be Rs. 3 an acre; on the whole the water-rate leviable thereon will be about Rs. 5,304 for the first crop and Rs. 1,326 for the second, making a total of Rs. 6,630.

3. This estimate is submitted for sanction as per order of the Chief Engineer's No. 1358 C., dated 11th March 1891, communicated with Superintending Engineer's No. 102 P.R., dated 31st May 1891. The opening of the vent provided for the sluice is similar to those sanctioned in lieu of plan No. 39.

4. A cistern is made in rear with an opening on each side, so that the lands at higher levels may be cultivated.

5. Rupees 60 is provided for a run-off channel from the sluice for a length of 500 feet.

MADURA,
3rd December 1891.

(Signed) G. P. CARLESS,
Ex. Engr., No. II Periyár division.

No. 579 P.R.

Copy submitted to the Chief Engineer, Public Works Department, in continuation of this office No. 116 P.R., dated 7th June 1891.

2. The plan and estimate, amounting to Rs. 1,650, promised in the letter above quoted for the proposed sluice, are also forwarded for orders.

(Signed) W. HUGHES,
Superintending Engineer, VI Circle.

22nd December 1891.

ORDER—dated 15th January 1892, No. 44 I., Public Works.

The following estimate is sanctioned from the balance available for unforeseen works of the Periyár project, which will then be reduced to Rs. 2,77,041 :—

Major Works (Construction).
49. Irrigation.
Periyár Project.
I. Works.
Main Channel, Third Reach.
(2) Main Canals and Branches.
D. Regulators.

	RS.
Constructing an irrigation sluice at 11 miles 5 furlongs and 500 feet, estimate	1,650

2. This sanction is registered as No. 176 I. of 1891–92.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, IV Circle, with four enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 15th.

Recd. *Encl.*

G.O., 15th Jan. 1892, No. 44 I.

JANUARY.

Periyar Project

Estimate, amounting to Rs. 1,650, for constructing an irrigation sluice at 11 miles 5 furlongs and 500 feet, main channel, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

No. 6 I.

Note by the Chief Engineer for Irrigation.

The Superintending Engineer, I Circle, has applied for additional allotments of Rs. 4,000 for extensions and improvements, Rs. 8,000 for maintenance and repairs and Rs. 4,000 for tools and plant in the Godávari Eastern division for the current year under 42. Major Works (Working Expenses), the existing allotments being insufficient. The unspent balances of the existing grants on 1st November last were as shown below :—

—	Existing allotments.	Outlay to end of October.	Balance.
	RS.	RS.	RS.
Extensions and improvements	10,849	9,330	1,519
Maintenance and repairs	75,000	74,249	751
Tools and plant	29,740	20,716	9,024

Materials have to be collected for sluices and dams to be built in the next season and important channels have to be put in hand. The complete removal of the shoals in the Teki and Thooliabagha drains and the thorough clearance of the Sámalkót canal have rendered a larger expenditure than in the previous year necessary. Some urgent repairs were carried out to other channels and drains in view of the requirements of second crop cultivation. The liabilities already incurred for repairs carried out in the Dowlaishweram Workshops to the floating plant amounted to Rs. 14,000 and urgent repairs are necessary to steamers, dredges and punts to the extent of Rs. 2,000. The rate of the Workshop percentage was in G.O., No. 2892 W., dated 29th November 1891, increased to 20 per cent., which involved an excess expenditure. By the transfer of locomotive engine and wagons to the Kistna delta, a recovery of Rs. 3,000 from the expenditure incurred in previous years is expected. The net demand under Tools and Plant is therefore Rs. 4,000 as shown below :—

		RS.
Liabilities ...		14,000
Urgent repairs ...		2,000
		16,000
Deduct—	RS.	
Balance ...	9,000	
Recovery ...	3,000	
		12,000
Net demand ...		4,000

2. The Superintending Engineer, II Circle, has applied for an additional allotment of Rs. 3,000 for the Kistna delta, Gudiváda division, under Extensions and improvements, a sum of Rs. 3,771 out of a grant of Rs. 4,000 having been spent to the end of November.

3. As there are no funds available to meet the above demands, it is suggested that the Government of India be requested to sanction an additional grant of Rs. 22,000 under 42. Major Works (Working Expenses) as shown below :—

	RS.	RS.
Godávari Delta.		
Extensions and improvements	4,000	
Maintenance and repairs	8,000	
Establishment	2,760	
Tools and plant	3,550	
		18,310
Kistna Delta.		
Extensions and improvements	3,000	
Establishment	690	
		3,690
Total ...		22,000

The statement required to accompany applications for additional grants is enclosed.

4. The Superintending Engineer, I Circle, reports that a sum of Rs. 1,418 is available for re-appropriation under 49. Capital Expenditure on Irrigation works not charged to Revenue owing to the transfer to the Kistna delta of the canal iron punt No. 14. This sum may be held in reserve to meet in part the demands for finishing off the incomplete works of the Godávari delta which will be dealt with separately as soon as the Superintending Engineer's application is returned by the Examiner of Public Works Accounts to whom it was sent for check.

CUDDAPAH,
9th January 1892.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ENCLOSURE.

STATEMENT to accompany application for an additional grant of Rs. 22,000 under 42. Major Works (Working Expenses) for expenditure during 1891–92.

Amount of expenditure in the year for which sanction is asked.	Major and minor heads under which the expenditure will fall with the amounts of sanctioned grants under each.	Probable expenditure in the whole year under the grants mentioned in column 2 if the expenditure in column 1 is sanctioned.	Major and minor heads under which it is proposed to reduce the grants with the sanctioned grants under each.	Probable expenditure in the year under the heads mentioned in column 4.	Amounts by which it is proposed to reduce the grants under the heads mentioned in column 4.	Explanation if no re-appropriation is considered possible. In such cases, the urgency and necessity for the outlay must also be explained.
1	2	3	4	5	6	7
RS. 22,000	42. Major Works (Working Expenses), Imperial.	RS. 11,74,000	RS. *Nil.*	RS. *Nil.*	RS. *Nil.*	Rs. 18,310 are required for the Godávari delta and Rs. 3,690 for the Kistna delta for an efficient upkeep of the works and for carrying out certain minor improvements which do not admit of postponement.

ORDER—dated 15th January 1892, No. 46 I., Public Works.

The Government of India will, as suggested by the Chief Engineer for Irrigation, be requested to sanction an additional grant of Rs. 22,000 under 42. Major Works (Working Expenses).

2. The surrender of Rs. 1,418 under 49. Capital Expenditure on Irrigation works not charged to Revenue will be held in reserve.

3. The following deferred telegram will be sent to the Government of India :—

Under 42 additional grant Rs. 18,310 for Godávari, Rs. 3,690 for Kistna, total Rs. 22,000 required urgently. Letter follows. Please wire sanction.

4. The following letter will be sent to the Government of India :—

(Here enter No. 47 I., Public Works, dated 15th January 1892.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " " II "
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 15th.

Recd. *Encl.*

G.O., 15th Jan. 1892, No. 46 I.

JANUARY.

Funds

Ordered that the Government of India be requested to sanction an additional grant of Rs. 18,310 for the Godávari and Rs. 3,690 for the Kistna delta works.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Letter—from

G. T. WALCH, Esq.,
Joint Secretary to the Government of Madras,
Public Works Department,
Irrigation Branch,

To

The SECRETARY to the GOVERNMENT of INDIA,
Public Works Department.

Sir,

In continuation of my telegram dated 15th January 1892, I am directed to forward, herewith, a copy of Proceedings of the Madras Government, No. 46 I., dated 15th January 1892, and to request that the Government of India will be pleased to increase the current year's grant under 42. Major Works (Working Expenses) from Rs. 11,52,000 to Rs. 11,74,000, the increase of Rs. 22,000 being urgently required for the Godávari and Kistna deltas.

I have the honour to be,
Sir,
Your most obedient servant,
(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

Fort St. George,
15th January 1892.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 15th.

Recd. *Encl.*

15th Jan. 1892, No. 47 I.

JANUARY.

Funds

The Government of India requested to sanction by wire an additional grant of Rs. 18,310 for the Godávari and Rs. 3,690 for the Kistna delta works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

G.O., dated 23rd December 1891, No. 1367, Financial.

Read—the following paper :—

From the Accountant-General, dated Madras, 17th December 1891, No. 3633.

Pending the settlement of the future Provincial contract, the particulars of which have not yet been communicated to me, I have the honour to inquire whether the following entries may be made in my estimates for 1892–93 on account of *interest on special assignment for Tank Restoration works :—*

		RS.
Revised estimate, 1891–92	... ...	35,000
Budget do. 1892–93	... ...	55,000

Revised estimate.—The actual expenditure on *Tank Restoration works* in 1888–89, as reported by the Public Works Department, amounted to Rs. 5,68,927, and, according to the principle subsequently agreed upon in G.O., Financial No. 863, dated the 8th September 1891, Rs. 5,68,927 — 1,50,000 or Rs. 4,18,927 only should have been adjusted against *Loan* funds to credit of Provincial; but in the accounts of that year the estimated amount, viz., Rs. 5,00,000, was actually adjusted.

Provincial revenues having been thus credited with the sum of Rs. 5,00,000, the interest adjusted against Provincial revenues in 1890–91 was calculated on that sum and not on the smaller sum of Rs. 4,18,927.

The expenditure in 1889–90 is reported to have amounted to Rs. 6,07,265, and, deducting Rs. 1,50,000 as above, the net amount bearing interest is Rs. 4,57,265. From this, however, a sum of Rs. 81,073, being the excess credited to Provincial revenues in 1888–89, should be deducted and interest calculated on the remainder, viz., Rs. 3,76,192. Thus the total amount, on which interest has to be adjusted in the current year, is Rs. 5,00,000 + 3,76,192 or Rs. 8,76,192 in all and the interest thereon comes up to Rs. 35,048, which I have taken at Rs. 35,000 for the revised estimate.

Budget estimate.—For the expenditure in 1890–91 interest will have to be adjusted in 1892–93 on Rs. 6,69,838—1,69,838 and will amount to Rs. 20,000. The total amount of interest which will have to be adjusted in 1892–93 is, therefore, Rs. 55,000.

Order—dated 23rd December 1891, No. 1367, Financial.

The Accountant-General's revised estimate is accepted.

2. It will be observed, from the accompanying * copy of the letter from the Government of India regarding the terms of the next Provincial contract, that the special adjustments on account of Tank Restoration works will cease with the current official year.

* *Vide* Financial G.O., No. 1261, dated 1st December 1891.

(True Extract.)

(Signed) N. S. BRODIE,
Acting Under-Secretary.

ORDER—dated 15th January 1892, No. 48 I., Public Works.

Communicated to the Chief Engineer for Irrigation and the Examiner of Public Works Accounts for information.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Examiner, Public Works Accounts.

IRRIGATION.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January 15th.

Recd. *Encl.*

G.O., 15th Jan. 1892, No. 48 I.

JANUARY.

Tank Restoration Works

Proceedings, Financial Department, accepting, with remarks, the revised estimate for 1892–93 of the Accountant-General on account of interest on special assignment for —, communicated to the Chief Engineer for Irrigation and the Examiner, Public Works Accounts.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

G.O., dated 2nd January 1892, No. C., Financial.

Read—the following papers :—

From the Public Works Department, Irrigation Branch, dated 12th December 1891, No. 205 I.

From the Chief Engineer for Irrigation, dated 19th December 1891, No. 66 W.

Order—dated 2nd January 1892, No. C., Financial.

An additional grant of one lakh will be assigned for expenditure on "Minor Works and Navigation," grant 43.

(True Extract.)

(Signed) J. F. PRICE,
Chief Secretary.

Order—dated 15th January 1892, No. 49 I., Public Works.

The additional grant of one lakh sanctioned from Provincial funds under 43, Minor Works and Navigation is distributed as shown below :—

(1) Minor Works for which Capital and Revenue Accounts are kept.
Revenue Account.
North Arcot Division.
Extensions and Improvements.

	RS.	RS.
Main channel improvements	40,000	
Establishment	9,200	
		49,200

(2) Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Chingleput Division.
Ordinary Works.

	RS.	
Minor original works	5,000	
Repairs	30,000	
Establishment	8,050	
Tools and plant	525	
		43,575

(3) Minor Works.

Revenue Department		7,225
	Total ...	1,00,000

2. The amounts for items (1) and (2) are appropriated in compliance with the demands referred to in para. 2 of G.O., No. 826 I., dated 24th October 1891, and the sum for item (3) is appropriated with reference to para. 2 of G.O., No. 963, Financial, dated 24th September 1891. In addition to the sum of Rs. 7,225 for this item, Rs. 1,528 are appropriated by reducing the grant for Minor works for which neither Capital nor Revenue Accounts are kept, P.W.D., in the Tinnevelly division, as shown in the margin, making a total of Rupees 8,753, which will be treated as an addition to the grant for Minor works, Revenue Department. This sum is appropriated to meet expenditure by the Public Works Department on such works in the following districts in lieu of the amounts provided by the Board of Revenue from the sum at its disposal:—

	RS.
Minor original works	1,227
Establishment	282
Tools and plant	19
Total ...	1,528

Districts.	Works.	Repairs.	Establishment.	Tools and plant.	Total.	References.
	RS.	RS.	RS.	RS.	RS.	
Anantapur	..	514	99	6	619	Board's Proceedings No. 115 of 19th February 1891, No. 5394 M. of 30th July 1891 and No. 6792 of 19th September 1891.
Salem	..	880	202	13	1,095	Collector's letter No. 2867 of 8th December 1891.
North Arcot	820	1,180	459	30	2,489	Board's Proceedings No. 3887 M. of 2nd July 1891 and No. 4895 of 13th July 1891.
South Arcot	1,095	..	252	16	1,363	Board's Proceedings No. 5158 of 23rd July 1891.
Tinnevelly	..	2,560	589	38	3,187	Board's Proceedings No. 115 of 19th February 1891 and No. 3316 M. of 13th May 1891.
Total ..	1,915	5,134	1,601	103	8,753	

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, IV Circle.
,, ,, ,, V ,,
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 15th.

Recd. *Encl.*

G.O., 15th Jan. 1892 No. 49 I.

JANUARY.

Funds

The additional grant of Rs. 1,00,000 assigned by the Financial Department for expenditure on Minor Works and Navigation distributed, with remarks, to the several districts.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 30th December 1891, No. 1721 G.D.

I have the honour to submit, herewith, an estimate, amounting to Rs. 1,340, for constructing a first-class staff boat in place of No. 11 staff boat and to request that you will be so good as to obtain the sanction of Government to the same.

2. Number 11 staff boat was constructed in 1878–79 at a cost of Rs. 1,780.

3. As suggested by you, the whole of the upper part of the existing boat No. 11 with its fittings, &c., will be utilized and so virtually only a new hull is required.

Enclosure.

Report to accompany the estimate of Rs. 1,340 for constructing a new staff boat in place of No. 11 first-class staff boat.

This estimate virtually provides only a new hull, as the old one is to be condemned. The upper part of the old boat will be utilized on the new boat as much as possible as ordered by the Superintending Engineer. The hull of the boat will be of the same design except the bow * which will be sharper and 1½ feet longer than that of No. 11.

* The shape at the stem to give a better " view " will also be improved.
8th Jan. 1892. (Intld.) G.T.W.

(Signed) J. INGLIS,
Assistant Engineer.

13th November 1891.

No. 5 I.

Recommended for sanction.

2. The rent of the new boat, the number of which will be 23, will be the same as that of No. 11, and, as the value of the upper part and fittings of that boat, which will be utilized in the new one, is fully Rs. 440, her original value to be entered in the books and staff boat statements will be Rs. 1,780.

3. In constructing the new boat special attention should be paid to improving the form of her " counter " and stern.

Cuddapah,
8th January 1892.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 15th January 1892, No. 50 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
42. Major Works (Working Expenses).
Godávari Delta, Eastern Division.
III. Tools and Plant.
9. Navigation Plant.

	RS.
Constructing new first-class boat, No. 23, in place of No. 11, estimate.	1,340

2. This sanction is registered as No. 178 I. of 1891-92.

3. The hull of boat No. 11 will be sold by auction and the proceeds brought into account in the usual way.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, I Circle.
,, Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 15th.

1 ecd. *Encl.*

G.O., 15th Jan. 1892, No. 50 I.

JANUARY.

Boat

Estimate of Rs. 1,340 for constructing new first-class — No. 23 in place of No. 11 in the Godávari Eastern division, sanctioned and sale of the hull of boat No. 11 by auction authorized.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 27th November 1891, No. 438 E.I.

I have the honour to submit, for sanction of Government, plans and estimate of Rs. 7,000 for reconstructing the surplus weir of Taiyur tank in Chingleput district.

2. The necessity of the work is fully explained in the report accompanying the estimate.

ENCLOSURE.

REPORT to accompany the estimate and plan for reconstructing surplus weir of Taiyur tank, Chingleput taluk, estimate amount Rs. 7,000.

Taiyur tank is the terminal work of a large group which discharges its surplus into the Buckingham canal.

Originally the weir now in utter ruins was 330 feet length, between wings is now not only entirely wrecked, but a deep breach has occurred beyond the north wing wall, by which both its returns were swept away.

The accompanying survey and section through its length represent its present condition together with the position of bund with reference to weir site.

The failure of the work is due to weak section of body, shallow foundations on treacherous decayed rock, which, having the appearance of strength, is easily destroyed by pickaxes and quickly dissolves under the action of water and bad alignment with reference to bund position.

The old weir, as will be seen, consisted of connecting with and adding to old works such additions as will be seen from the sections of extremely weak sectional area, but, even the strongest portion, that at the south end, is now showing evidences of yielding to undermining, due to the soluble nature of fragmentary laminated decaying rock on which it rests.

It is now proposed to reconstruct on a new alignment suitable to bund position of one uniform section and fall, designed to drop the surplus water down to average level of rock, so that there will be very little drop on to the rock to avoid injury to it, which, with any head, will occur. All useful materials of old structure to be utilized in the new construction—which is longer by 35 feet than the old, which will not only render the tank safer, but will be cheaper to thus extend than to close the balance with earth bund which on such foundation will be liable to breaching again when floods occur—this will be evident, when it is considered the present breach occurred when the weir was considerably wanting from being previously breached, how much more readily such would again occur when the weir is perfect. Another preventative to a recurrence of a breach is the new alignment proposed.

Moreover curtailment of its length will be no economy, taken into consideration that it receives the surplus of 14 tanks having a combined catchment of 9·6 square miles, making, with its own of 6·1 square miles, 15·7 square miles and liable to receive extra water in the event of breaching of any of the 14 upper tanks. Its expected revenue is Rs. 3,261 and acres 1,100 nearly.

Taiyur tank, if 381, is given as 856 acres, Rs. 2,779 present irrigation, in Russell's list. In submitting such proposals the department would do well to obtain and enter up actual revenue for, say, 5 years.

(Intld.) J. T.

The nature of soil, as above described, is such that to cut same out to a straight line is impossible; it will be rough, irregular and jagged; hence concrete in foundation will be expensive,

which even, under ordinary circumstances, is in fact more costly owing to increased width necessary over that required for brick in mortar, which as on this work being a dam across a deep channel is more suitable, but as a bedding for apron between foundation of body wall and rear retaining wall concrete in surki mortar will be better than any other work, and, since it will not be required to bear much weight and a hydraulic bed is needed if burnt brick jelly is used, to some extent it will serve the required purpose better, for this the brick *debris* could be utilized and thus effect a saving in this item.

Slab stones have to be obtained from Seven Pagodas for the lesser half of this material required.

Considering the difficulty of a passage through either tank-bed in front or that of surplus channel in rear together with the length of weir, easy passage along the weir is advisable; hence the provision of steps in wing walls; it is believed that there will be remnants of slab stones after pavement is completed that could be dressed on upper surface and frontage to serve as steps if so such to be used to replacement of plastered brick in mortar.

The estimate provides for filling in behind body wall in bed of tank with the result of foundation excavation and clay procured from tank-bed; this latter is to be used exclusively for filling in foundation trenches unoccupied by masonry and within wing wall as a better material for the purpose than the decayed rock from foundation to be put entirely in behind body wall mixed with clay sloping upward from tank-bed about 1 in 9 or 10 to prevent current setting towards foundation bed and endangering the structure.

All work to be done in accordance with paragraphs of standard specifications referrable thereto.

24th October 1891. (Signed) J. B. SANDERSON, Sub-Engineer, Chingleput Sub-division.

8th November 1891. (Signed) C. H. B. BURLTON, Executive Engineer, Chingleput division.

Order—dated 15th January 1892, No. 51 I., Public Works.

The following estimate is sanctioned:—

Provincial.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Chingleput Division.
Original Works.

	RS.
Taiyur tank (No. 381 of the list communicated with G.O., No. 407 I., dated 6th July 1887), surplus weir reconstruction, estimate ...	7,000

2. This sanction is registered as No. 177 I. of 1891–92.

3. Before carrying out the work, the Superintending Engineer, V Circle, will decide as to the advisability of all the filling in proposed in front of the work, for which a provision of Rs. 186 has been made in the estimate.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, V Circle, with six enclosures.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 15th.

Recd. *Encl.*

G.O., 15th Jan. 1892, No. 51 I.

JANUARY.

Taiyur Tank, Chingleput District

Estimate of Rs. 7,000 for reconstruction of the surplus weir —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From W. HUGHES, Esq., Superintending Engineer, VI Circle, to the Chief Engineer, Public Works Department, dated Trichinopoly, 5th January 1892, No. 589 P.R.

With reference to G.O., No. 929 I., dated 8th December 1891, sanctioning the revised estimate of Rs. 2,440 for constructing a head sluice * to the ninth branch channel of the Periyár project, I have the honour to point out that the amount provided for the work in the sanctioned estimates for the project is Rs. 2,500—*vide* the last item in page 46 of the blue book of the project. There is thus a saving of Rs. 60 on the original estimate instead of an excess of Rs. 740 as stated in the Government Order. The former sum will have to be added to the reserve for unforeseen works.

* Plan No. 36.

ORDER—dated 16th January 1892, No. 52 I., Public Works.

For the ninth branch channel provision was made in the sanctioned estimate for the Periyár project for two head sluices, the first, plan No. 36, on Rs. 2,500, and the second, plan No. 37, on Rs. 1,700. In the sanction accorded in G.O., No. 929 I., dated 8th December 1891, the provision made for the first sluice ought to have been superseded instead of that for the second. The amount available for unforeseen works which was reduced in that order will therefore be increased to Rs. 2,77,841 as shown below :—

		RS.
Balance as per G.O., No. 44 I., dated 15th January 1892 ...		2,77,041
Add amount erroneously reduced in G.O., No. 929 I., dated 8th December 1891	RS. 740	
Saving reported by Superintending Engineer, VI Circle...	60	
		800
Existing balance ...		2,77,841

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, VI Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 16th.

Recd. *Encl.*

G.O., 16th Jan. 1892, No. 52 I.

JANUARY.

Head sluice to the ninth branch channel, No. II Periyar Division

Correcting certain errors in the Proceedings sanctioning the revised estimate for a —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 23rd December 1891, No. 1705 G.D.

With reference to para. 2 of G.O., No. 635 I., dated 25th October 1888, and the enclosed correspondence as per margin regarding the water-supply from Jagannaikpur channel to the Cocanada town and to the lands irrigated from that channel, I have the honour to inform you that it is proposed to excavate a new channel to irrigate the lands which have been hitherto irrigated from Jagannaikpur channel, Cocanada canal, in the Godávari Eastern Division, and I therefore herewith submit the following estimates, amounting to Rs. 3,910, with the request that you will be so good as to obtain the early sanction of Government to the same.

Copy of Deputy Collector's letter, No. 465, 19th Sept. 1891, with the Collector's endorsement, No. 4207, 11th Oct. 1891, thereon.
Godávari Eastern Division Executive Engineer's letter, No. 485 S, 17th Oct. 1891, to the Superintending Engineer (to be returned.)
Copy of Superintending Engineer's letter, No. 1322 G.D., 22nd Oct. 1891, to the Collector.
Copy of Collector's letter, No. 1565, 13th April 1891, together with a copy of the statement therewith received.

	Etimates. RS.
Excavating a new channel from Jagannaikpur channel	3,270
Constructing a regulator for a new channel from Jagannaikpur channel to supply Municipal and Irrigation channels	640
Total ...	3,910

2. The reason for allowing water-supply to the lands subsequent to the negative orders of Government (*vide* Government Order above referred) have been explained in the Executive Engineer's letter, No. 485 S., dated 17th October 1891.

3. The rate for land compensation is allowed in the estimate at Rs. 300 and Rs. 50 for permanent and temporary occupation, respectively, of lands for the channel, and this high rate is due to the high value of the lands around Cocanada.

4. The estimates have been countersigned by the Collector in token of his approval.

5. It appears from the statement received with the Collector's letter, No. 1565, dated the 13th April 1891, which forms one of the enclosures, that the average area irrigated, including Mamulpallem lands, is 368 acres, and the revenue derived in the shape of water-tax is Rs. 753 ; this shows that the work proposed is remunerative, and I therefore submit the estimates for sanction.

ENCLOSURE.

REPORT to accompany estimate for the proposed Irrigation channel from Jagannaikpur channel.

The head sluice of the existing channel is capable of discharging 24 cubic feet with a head of 1 foot. This head is always obtainable with O.F.S.L. in the Cocanada canal (= 9·50) and with water level in rear of the sluice = 8·50, which may be taken as F.S.L. in the channel.

The total irrigable area under the sluice may be taken as 700 acres. This is a maximum.

The discharge required for this acreage is 700/38 = 17 cubic feet. The discharge required for the consumption of Jagganaikpur at about 20 gallons per head may be taken as 3 cubic feet per second at a maximum.

This is easily obtained (with a head of less than 3 inches) through the vent in the proposed regulator. The second vent in the proposed regulator is capable of discharging 16 cubic feet or sufficient for 600 acres with the same head. This is the maximum area to be supplied below the regulator, 100 acres being supplied from the channel above the regulator through a pipe in the bank.

The size of the vent in the regulator to supply the Municipal channel is purposely made considerably larger than is absolutely required; the level of the sill being + 5·00 which gives a fall of 1 foot in the channel to the sill of the aqueduct leading into the town.

The floor of the head sluice is + 2·75 which is much too low. The bed of the channel is taken as + 5·00 in rear to correspond with the regulator sill at the head of the Municipal channel, it being considered that the requirements of the Municipal channel ought to determine the level of the other works.

There is a drop of 6 inches in rear of the Irrigation vent of the regulator, and the channel commences with a bed level of + 4·50, the bed width being 4 feet at the head and 3 feet at the tail and the bed fall ·50 feet per mile. The work chiefly consists of banking, as the ground is low.

The provision for land compensation is heavy on account of the high value of the land round Cocanada.

DOWLAISHWERAM,
13th November 1891.

(Signed) C. M. SMITH,
Ex. Eng., Godávari Eastern Division.

No. 7 I.

Note by the Chief Engineer for Irrigation.

Of the land for which the new channel is proposed, nearly half will pay no water-tax and more than half of the estimate, as submitted is for compensation for land which has been put down at the very high rate of Rs. 300 an acre. It is not recommended that the work should be carried out if the land cannot be acquired for at *the most* Rs. 200 an acre, and the estimate is altered accordingly; no work should be done till the land has been acquired at *within* this rate.

2. An addition has been made to the estimate for demarcation of the land in accordance with para. 1282 A. of the Public Works Code, which should not have been forgotten, and the estimate, together with the regulator (Rs. 640) becomes Rs. 3,440, which is recommended for sanction.

CUDDAPAH,
9th January 1892.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 19th January 1892, No. 54 I., Public Works.

The following estimate, as altered by the Chief Engineer for Irrigation, is sanctioned.

Irrigation.
42. Major Works (Working Expenses).
Godávari Delta System.
Eastern Section.
1-A. Extensions and Improvements.
(3) Distributaries.
Cocanada Canal.
L. Earthwork.

	RS.
Excavating a new channel from Jagannaikpur channel	2,800
C. Works.	
Regulator at head of Municipal channel	640
Total estimate ...	3,440

2. This sanction is registered as No. 179 I. of 1891-92.

3. The Superintending Engineer will pay attention to the remarks of the Chief Engineer for Irrigation in the above note.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle, with eleven enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 19th.

Recd. *Encl.*

G.O., 19th Jan. 1892, No. 54 I.

JANUARY.

Channel from Jagannaikpur Channel

Estimate, amounting to Rs. 3,440, for excavating a new — and for a regulator at head of Municipal channel, Cocanada, in the Godávari Eastern Division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

Resolution of the Government of India, Public Works Department (Account—Irrigation), dated Calcutta, 5th January 1892, No. 4 A.-I.

[*Provincial grants for Imperial Irrigation works for the year* 1892–93].

Read—the following papers :—

Letter from the Secretary to the Agent to the Governor-General in Rajputana, No. 2828 S., dated 7th December 1891.
Letter from the Secretary to the Agent to the Governor-General in Baluchistan, No. 3768, dated 11th December 1891.
Letter from the Secretary to the Chief Commissioner in Burma, No. 14473—157 A., dated 10th December 1891.
Letter from the Secretary to the Government of Bengal, No. 1742 I., dated 10th December 1891.
Telegram from the Secretary to the Government of the North-Western Provinces and Oudh, dated 16th December 1891.
Letter from the Secretary to the Government of the North-Western Provinces and Oudh, No. C. 1376 I., dated 16th December 1891.
Letter from the Secretary to the Government of the Punjab, No. 0358 I., dated 15th December 1891.
Letter from the Secretary to the Government of Madras, No. 942 I., dated 9th December 1891.
Letter from the Secretary to the Government of Bombay, No. 158 A.-I.—2070, dated 11th December 1891.
Letter from the Secretary to the Government of Bombay, 159 A.-I.—2071, dated 12th December 1891.

Resolution.—The allotments provisionally sanctioned by the Government of India for 1892–93 are shown in the following table :—

—	PROVISIONAL GRANTS, 1892–93.			
	35. Construction of Protective Irrigation Works.	42. Major Works (Working Expenses).	43. Minor Works and Navigation.	49. Irrigation, Capital Expenditure not charged against Revenue.
	RS.	RS.	RS.	RS.
Rajputana	...	...	45,000	...
Baluchistan	...	...	23,000	...
Upper Burma	...	...	5,00,000	...
Bengal	...	...	...	6,00,000
North-Western Provinces and Oudh ...	31,000	1,02,000	6,000	7,00,000
Punjab	45,000	21,72,000	6,80,000	26,00,000
Madras	4,50,000	11,96,000	...	13,00,000
Bombay	1,24,000	4,30,000	19,15,000	2,00,000
Total ...	6,50,000	39,00,000	31,69,000	54,00,000

2. 35. *Construction of Protective Irrigation Works.*—The grant of Rs. 1,24,000 for works in Bombay is to provide for expenditure on the Nira canal and the Mhaswad tank. The Government of India regrets that no grant can be admitted for the Chankapur tank from Imperial funds for the reasons stated in Public Works Department letter No. 205 I., dated 23rd December 1890.

3. 43. *Minor Works and Navigation.*—Financial considerations render impossible the grant of a larger sum than Rs. 19,15,000 for Irrigation works in Bombay, and the amount provisionally allotted is given on the understanding that sufficient provision will be made for the efficient maintenance of all existing works and that works in progress will be provided for before any new works are commenced.

4. The provisional grant of Rs. 45,000 for works in Rajputana is intended to meet ordinary expenditure on works and repairs. Separate orders will issue regarding the extra grant of Rs. 1,41,600 applied for on account of famine relief works.

5. Owing to other more pressing demands the Government of India regrets its inability to sanction any allotment of funds for the construction of the Haikalzai branch of the Khusdilkhan reservoir in Baluchistan. The provisional grant of Rs. 23,000 is to provide for minor works and revenue charges.

6. 49. *Irrigation—Capital Expenditure not charged against Revenue.*—The grant of Rs. 13,00,000 for Irrigation works in Madras is to provide for expenditure on works in progress. Financial considerations render it desirable that the works on the Kalingaroyen channel should, for the present, be postponed.

Order.—Ordered that the foregoing be communicated to the Local Governments and Administrations noted in the margin, for information and guidance, with the request that the preliminary issues of the budget estimates prepared for the amounts now sanctioned may be submitted so as to reach the Government of India punctually on the 15th February next.

The Governments of Madras, Bombay, Bengal, the North-Western Provinces and Oudh, and the Punjab.
The Chief Commissioner of Burma.
The Agents to the Governor-General for Rajputana and Baluchistan.

Ordered also that a copy be forwarded to the Finance Department for information.

(Signed) J. G. FORBES, Colonel, R.E.,
Secretary to the Government of India.

To the Secretary to the Government of Madras,
Public Works Department.

ORDER—dated 19th January 1892, No. 55 I., Public Works.

Communicated to the Chief Engineer for Irrigation for information and guidance in preparing the preliminary budget estimate for "Major Works" for next year.

2. The provisional grant of thirteen lakhs under 49. Irrigation, Capital Expenditure not charged against Revenue, for next year will be distributed as shown below :—

	Amounts applied for for 1892-93.	Provisional grants for 1892-93.
	RS.	RS.
Kistna delta	4,23,000	4,23,000
Sangam anicut project	36,000	36,000
Periyár project, No. 1 division	4,81,000	4,81,000
Do. No. 2 do.	3,93,000	3,60,000
Kalingarayen channel	1,74,000	...
Total ...	15,07,000	13,00,000

The Superintending Engineer, VI Circle, will submit as soon as possible a statement showing the distribution by component works of the reduced grant of Rs. 3,60,000 for the No. 2 Periyár division.

3. The following deferred telegram will be sent to the Superintending Engineer, I Circle:—

"India reduced grant for Rushikulya project for next year to 4½ lakhs including establishment, tools and plant. Please send at once distribution statement for this amount."

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " " II "
" " " IV "
" " " VI "
" Superintendent of Works, Periyár Project.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 19th.

Recd. *Encl.*

G.O., 19th Jan. 1892, No. 55 I.

JANUARY.

Grants for Imperial Irrigation Works

Orders on the resolution of the Government of India fixing the provisional — for 1892–93.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following papers :—

No. 211 C.E.

Report of Progress for December 1891.

Staff.—Mr. W. B. deWinton, Executive Engineer, second grade, assumed charge of the office of Superintendent of Works on December 21st.

2. *Main dam.*—The progress during the month is—

		C. FT.
Concrete	... ...	97,858
Rubble	... ...	26,072
	Total ...	123,930

or nearly double the progress of any previous month. The reasons for this are (1) the month was a very good one for work, there being practically no interruption from either rain or floods and only 5 idle days (*i.e.*, Christmas and 4 Sundays); (2) owing to frequent stoppages of work in October and November, a large stock of broken stone had accumulated and was supplied to the work more rapidly than usual, while the machinery worked more smoothly. This rate of progress averages 4,766 cubic feet per working day, but it cannot be maintained unless stone is procured in greater quantities. If a rate of 5,000 cubic feet per day is maintained it will take 4½ years to complete the dam and endeavours will at once be made to reach this rate as soon as possible. The rate originally calculated upon was 5,921 cubic feet per day, but it is feared that the labour obtainable will always prove insufficient for this. The present condition of the dam is as follows:—

For a length of 220 feet on left flank the front wall has been raised to + 31 (zero being average bed of river), the rear wall to + 19·50, and the concrete in between the two to + 15.

For a length of 126 feet to the right of the above, the front wall has been raised to + 25 and is used as a weir, no rear wall having yet been built, or concrete laid behind it; this portion of the work will shortly be commenced. Connecting this length with the right bank of river are three vents, each of 12 feet width, built in the line of the front wall, through which water is passed to the turbine and to the river below.

3. *Workshops.*—The sixth stone-crusher was brought down and its erection nearly completed. Stone platforms above the crushers were completed and fenced. The elevators were overhauled and supplied with new buckets. No. 2 belt conveyor for carrying stone from east crusher to trucks was completed. The turbine was raised $\frac{1}{16}$" and worked more smoothly. The machinery now erected consists of two sets each, comprising—

- 3 stone-crushers.
- 2 disintegrators, 1 for lime, 1 for surki.
- 1 mortar-mixer.
- 1 concrete-mixer.

Only one set has hitherto been in complete working order and in this frequent stoppages occur owing to hot bearings, choking of disintegrators, &c. The turbine (150

H.P.) also drives the wire ropeway, carrying materials across the river, which will be completed in a few months' time, so as to make a complete circuit of the work.

4. *Right bank escape.*—The quantities quarried during the month were—

	C. FT.
Stone	48,000
Earth	337,000

one pound of explosive being used for every 92 cubic feet of stone obtained. This escape cannot supply half the stone required for the dam and new quarries must be opened at once.

5. *Wire ropeway, Kuruvanuth to Thekady.*—The required wire only arrived in the last days of the month. Every effort will be made to complete and utilise the ropeway in January; a signal wire is being erected.

6. *Water-shed cutting.*—An unfortunate outbreak of supposed cholera occurred early in the month among the coolies employed on this work. They at once bolted and the work was at a standstill for the remainder of the month. No progress made. The labour has now returned.

7. *Water-shed tunnel.*—Total progress made was 143 feet, average monthly progress to date being 138½ feet. This progress was distributed as follows:—

	Feet.	Working days.
North end of tunnel (one face)	106	23
No. 2 shaft (4,125 feet from N. end) (two faces)	37	10

The work was delayed at the N. end by cutting into a heavy stream of water and by tough red rock, while at No. 2 shaft the greater part of the month was occupied in fixing and improving the hoisting machinery and the shaft. It is calculated that, if nothing unforeseen occurs, this tunnel will be completed by 1st April 1894, which will be in ample time for the dam.

	FEET.
Total length of tunnel	5,643
Do. completed	1,977
Balance ...	3,666

8. *Mulya Panjan canal.*—The rebuilding of No. 3 dam (destroyed by floods in November) was commenced and completed to a height of 12 feet. The transport of lime stone by the canal continued, the maximum quantity carried in any one day being 1,000 cubic feet, which will have to be increased.

9. *Rainfall*—

	INS.	CTS.
Thekady	1	90
Periyár	0	36

10. *Conservancy and sanitation.*—The sanitary arrangements are fairly good, but admit of some improvement. The health of the camps was good at Periyár, bad at Thekady, the figures being—

	Deaths per 1,000	Sick per 1,000
Periyár	2·3	32·4
Thekady	11·3	251·2

The high figures at Thekady are due principally to the attack of cholera above referred to, which occasioned 5 deaths. The camp was burnt and every necessary sanitary measure adopted and the place is now healthy.

11. *Expenditure.*—The estimates for the principal works in this division will all be exceeded to a greater or less extent. Revised estimates will be submitted in the course of the current calendar year.

Periyar,
9th January 1892.

(Signed) W. B. deWINTON,
Supdt. of Works, No. I Periyár division.

To the Chief Engineer, Public Works Department.

Note by the Chief Engineer, Public Works Department.

Submitted for the information of Government.

2. The improved progress on the main dam is satisfactory. Every effort should be directed to bringing up each portion of the length of the dam to a uniform level from front to rear so as to avoid the injury to which the rear portion is exposed by the shock of falling water when it is lower than the front.

3. The progress on the tunnel is disappointing, but it is understood that the causes of delay mentioned in the report have now ceased to exist and that the progress during the current month will be as good as in November.

14th January 1892. (Signed) J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

ORDER—dated 21st January 1892, No. 56 I., Public Works.

Recorded.

(Here enter No. 57 I., Public Works, dated 21st January 1892.)

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent of Works, Periyár Project.
" Chief Engineer for Irrigation.
" Revenue Department.

ENDORSEMENT—dated 21st January 1892, No. 57 I., Public Works.

Copy forwarded for the information of the Government of India.

(By Order.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

IRRIGATION.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 21st.

Recd. *Encl.*

G.O., 21st Jan. 1892, Nos. 56, 57 I.

JANUARY.

Periyar Project

Forwarding copy of note by the Chief Engineer, Public Works Department, on the progress report of the Periyár Works, No. I division, for December 1891.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From W. HUGHES, Esq., Superintending Engineer, VI Circle, to the Chief Engineer, Public Works Department, dated Trichinopoly, 5th January 1892, No. 587 P.R.

With reference to your memo. No. 5162 C., dated 20th November 1891, I have the honour to submit, for the sanction of Government, an estimate, amounting to Rs. 7,500, for constructing a regulator and bridge combined at 27th mile 3 furlongs and 350 feet in the eighth reach of the main channel in No. II Periyár division.

2. The Executive Engineer states that the width of roadway, viz., 9 feet, as now provided, seems sufficient. The height of front parapet has been reduced to 1 foot and of the shutter to 5 feet as ordered in paras. 1 and 4 of your memorandum.

3. The total saving on the masonry works of the eighth reach is Rs. 2,380 as shown below:—

Original estimates as shown in blue book.

	RS.
1 inlet (*vide* plan No. 57) ...	4,100
1 outlet („ „ 58) ...	8,280
1 bridge („ „ 74) ...	3,670
Total ..	16,050
Deduct amount of revised estimate.	13,670
Difference ...	2,380

Revised estimates.

	RS.
1 culvert in the eighth reach sanctioned in G.O., No. 841 I., dated 29th October 1891	3,550
2 outlet weirs in the eighth reach sanctioned in G.O., No. 934 I., dated 9th December 1891	2,620
1 bridge and regulator combined in the eighth reach now proposed. ...	7,500
Total ...	13,670

4. This difference will have to be met from the reserve for unforeseen works, the savings from the first two items—inlet and outlet—having been in G.O., No. 934 I., of 9th December 1891, credited to the said reserve.

ORDER—dated 21st January 1892, No. 58 I., Public Works.

	RS.	RS.
Balance shown in the Proceedings of the Madras Government No. 52 I., dated 16th January 1892		2,77,841
Deduct—		
Estimate sanctioned in G.O., No. 934 I., dated 9th December 1891	2,620	
Saving erroneously credited in G.O., No. 934 I., dated 9th December 1891, the project provision for the inlet and outlet having been disposed of in G.O., No. 841 I., dated 29th October 1891.	9,760	
Excess now sanctioned	3,830	
		16,210
Balance still available		2,61,631

The following estimate, amounting to Rs. 7,500, for constructing a regulator and bridge combined at 27th mile 3 furlongs and 350 feet in the eighth reach of the Periyár main channel, is sanctioned in lieu of Rs. 3,670 provided for a bridge in the project estimate, the difference of Rs. 3,830 being met from the balance available for unforeseen works, which will then be Rupees 2,61,631 as shown in the margin.

Major Works (Construction).
49. Irrigation.
Periyár Project.
I. Works.
(2) Main Canals and Branches.
Main Channel, Eighth Reach.
D. Regulators.

	RS.
Constructing a regulator and bridge combined at 27th mile 3 furlongs and 350 feet, estimate	7,500

2. This sanction is registered as No. 180 I. of 1891–92.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, VI Circle, with four enclosures.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 21st.

Recd. *Encl.*

G.O., 21st Jan. 1892, No. 58 I.

JANUARY.

Periyar Main Channel

Estimate of Rs. 7,500 for constructing a combined regulator and bridge at 27th mile 3 furlongs and 350 feet in the eighth reach of the —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

Return of open Capital sanctions for the Godávari Delta System for 1891.

Item No.	Register No.	Sanctioning authority.		Name of work.	Amount sanctioned (including establishment and tools and plant charges). Class (I). (a)	Class (II). (b)	Date on which sanction closes.
				WORKS FOR WHICH DETAILED ESTIMATES HAVE BEEN SANCTIONED BY COMPETENT AUTHORITY BEFORE CONSTRUCTION ESTIMATE WAS CLOSED.	RS.	RS.	
				Central Section.			
				Bendamurlanka Canal.			
1	No. 43 I. of 1891–92.	Government of India letter No. 65 I. of 27th April 1891.	(2) K.	Inspection shed	972	..	31st March 1891.
				Establishment	224	..	
				Total ..	1,196	..	
				Main Canal.			
2			(2) I.	Bobberlanka lock	..	2,600	31st March 1891.
3			(2) L.	Canal improvements	..	348	Do.
4			(2) B.	Compensation for land	..	342	Do.
				Gunnaram Canal.			
5			(2) B.	Compensation for land	..	258	31st March 1891.
6			(2) G.	Fender pile foot bridge at Ramachandrapur surplus weir	..	74	Completed.
7			(3) C.	Mataparru channel head sluice	..	54	Do.
8				Malikipuram do. do.	..	4	Do.
9				Sluice at 14 miles 70 chains for direct irrigation	..	150	31st March 1891.
10				Sluice at 45 miles 4 chains	..	98	Completed.
11				Mori channel head sluice	..	18	Do.
12				Velankayalakodu channel head sluice ..	..	38	Do.
13				Antervedi channel head sluice	..	62	Do.
14				Kobberitota channel head sluice ..	..	56	Do.
15			(3) B.	Parallel channel from Mamiditota to Kokkerayalakodu	..	105	Do.
16				Branch from Bolitippa channel to irrigate high lands of Tatipaka	..	200	31st March 1891.
17			(3) L.	Do. do. do. ..	..	196	Do.
				Bank Canal.			
18			(2) B.	Compensation for land	..	300	31st March 1891.
19			(3) B.	Vedapalem channel	..	2,300	Do.
20				Palankurru, No. 2 channel	..	118	Do.
21				Nimmakayala Kottapalli channel head sluice	..	— 1	Completed.
22				Dondikurru channel head sluice ..	..	109	31st March 1891.
23				Kondikuppa do. do.	..	121	Do.
24				Palankurru, No. 2 channel head sluice ..	..	102	Do.
25				Vadapalem do. do. ..	..	80	Do.
26				Giddanapalli do. do. ..	..	93	Do.
27				Amapuram and Kondaleshwaram sluice ..	..	206	Completed.
28			(3) L.	Vadapalem channel	..	2,537	31st March 1891.
29				Dantikurru branch channel	..	840	Do.
30				Anataram channel	..	— 71	Completed.

(a) Works which are necessary for the full development of the project, but which are not in themselves directly remunerative.

(b) Works which are directly remunerative in themselves.

Return of open Capital sanctions of the Godávari Delta System for 1891—*cont.*

Item No.	Register No.	Sanctioning authority.		Name of work.	Amount sanctioned (including establishment and tools and plant charges). Class (I). (a)	Class (II). (b)	Date on which sanction closes.
				Central Section—*cont.*	RS.	RS.	
				Amalápuram Canal.			
31	No. 43 I. of 1891–92.	Government of India letter No. 65 I. of 27th April 1891.	(2) B.	Compensation for land	..	54	31st March 1891.
32			(3) C.	Vani-Chintalapudi channel sluice ..	..	447	Do.
33				Bandarulanka channel head sluice ..	..	81	Do.
34				Kunavaram channel head sluice	..	227	Do.
35				Saripalli channel sluice	..	321	Do.
36				Vilsa channel and dam	..	360	Completed.
37				Challapalli channel sluice	..	130	31st March 1891.
38				Surasamyanam channel sluice	..	73	Completed.
39				Pedapudi channel sluice	..	54	31st March 1891.
40			(3) L.	Bhatvavilli channel	..	310	Do.
41				Parallel channel from 28th mile	..	670	Do.
42				Vani-Chitalapudi channel at 35½ miles ..	..	65	Completed.
				Bendamurlanka Canal.			
43			(2) B.	Compensation for land	..	120	31st March 1891.
44			(2) E.	Surplus weir at 37 miles 2 chains ..	..	963	Do.
45			(3) C.	Bodasakurru channel head sluice ..	..	113	Do.
46				Godilanka channel head sluice	..	271	Do.
47				Chanchula channel head sluice	..	269	Do.
48				Kowsika new irrigation channel sluice ..	..	150	Do.
49				Bellugedda channel head sluice	..	191	Do.
50				Allavem channel sluice	..	30	Do.
				Drainages.			
51			(4) C.	Panchanaddi drain inlet, No. 2	..	66	31st March 1891
52				Do. do. ,, 1	..	85	Do.
53			(4) B.	Channel from Ralli surplus weir ..	..	770	Completed.
54			(4) L.	Kunnaram drain improvements	..	10	Do.
				Western Section.			
				Venkiah and Wyeru Canal.			
55			(3) C.	Fixing articulated pipe to take water from Annayakodu irrigation channel extension across Adala creek	..	741	Completed.
				Total ..	..	17,908	
				Establishment ..	..	3,114	
				Total ..	1,196	21,022	
				WORKS FOR WHICH NO DETAILED ESTIMATES HAD BEEN SANCTIONED WHEN THE CONSTRUCTION ESTIMATE WAS CLOSED.			
56			Tools and Plant.	Priestman's dredger "A" size and barge.	14,270	..	31st March 1892.
				Western Section.			
				Main Canal.			
57			(2) I.	Vizesweram lock	..	76,000	31st March 1892.
58				Deduct value of old lock written back to Revenue accounts	..	25,000	
				Net amount ..	..	51,000	
				Establishment ..	..	11,730	31st March 1892.
				Total ..	..	62,730	
				Total ..	14,270	62,730	

(*a*) Works which are necessary for the full development of the project, but which are not in themselves directly remunerative.
(*b*) Works which are directly remunerative in themselves.

12th January 1892.

(Signed) W. C. LEWIS,
for Chief Engineer for Irrigation.

Return of open Capital sanctions for the Pennér Anicut System for 1891.

Item No.	Register No.	Sanctioning authority.		Name of work.	Amount sanctioned including establishment and tools and plant charges. Class (I). (a)	Class (II). (b)	Date on which sanction expires.
				WORKS FOR WHICH DETAILED ESTIMATES HAVE BEEN SANCTIONED BY COMPETENT AUTHORITY BEFORE CONSTRUCTION ESTIMATE WAS CLOSED.	RS.	RS.	
				NELLORE TANK SUPPLY CHANNEL.			
..	138 I. of 1891–92.	Govt. of India letter No. 224 I. dated 29th October 1891.	2 L.	Embanking and widening	..	1,230	31st March 1892.
..				Establishment	..	283	Do.
				Total ..	..	1,513	

(a) Works which are necessary for the full development of the project, but which are not in themselves directly remunerative.
(b) Works which are directly remunerative in themselves.

12th January 1892.

(Signed) W. C. LEWIS,
for Chief Engineer for Irrigation.

Return of open Capital sanctions for the Barur tank project for 1891.

Item No.	Register No.	Sanctioning authority.		Name of work.	Amount sanctioned including establishment and tools and plant charges. Class (I). (a)	Class (II). (b)	Date on which sanction expires.
				WORKS FOR WHICH DETAILED ESTIMATES HAVE BEEN SANCTIONED BY COMPETENT AUTHORITY BEFORE CONSTRUCTION ESTIMATE WAS CLOSED.	RS.	RS.	
1	No. 153 I. of 1891–92.	Government of India letter No. 230 I., dated 14th November 1891.	(1) C.	Anicut across the Poonniar at Nedungal ..	..	116	31st March 1892.
2			(2) L.	Cutting new head to Agaram channel ..	..	1,185	
3			(3) C.	Constructing 35 outlets and 6 terminals ..	..	1,389	
4				Do. 60 distribution sluices ..	..	1,390	
5				Do. 19 masonry falls	..	640	
6			(3) L.	Cutting Kilcuppam East main channel ..	..	289	
7				Do. do. branch channel No. 3 ..	..	83	
8			(3) C.	Constructing an aqueduct at Barur tank project to carry jungle stream over the East main channel at 3 miles and 3½ furlongs.	..	393	
9			(3) D.	Providing two regulators to the supply channel of the Barur tank.	..	2,770	
				Total ..	..	8,255	
				Establishment ..	..	1,899	
				Total ..	..	10,154	

(a) Works which are necessary for the full development of the project, but which are not in themselves directly remunerative.
(b) Works which are directly remunerative in themselves.

12th January 1892.

(Signed) W. C. LEWIS,
for Chief Engineer for Irrigation.

Order—dated 21st January 1892, No. 61 I., Public Works.

Ordered that the above returns be submitted to the Government of India with reference to para. 2 of its No. 122 I., dated 17th July 1890, printed with G.O., No. 450 I., dated 20th August 1890.

(Here enter No. 62 I., Public Works, dated 21st January 1892.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle.
„ „ „ II „
„ „ „ IV „
„ Examiner, Public Works Accounts.
„ Revenue Department.

Endorsement—dated 21st January 1892, No. 62 I., Public Works.

Forwarded.

(By Order).

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS

Dated January, 21st.

Recd. *Encl.*

G.O., 21st Jan. 1892, Nos. 61, 62 I.

JANUARY.

Godavari Delta, Penner Anicut and Barur Tank Systems

Forwarding the returns of open Capital sanctions for the — for 1891.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From Lieut.-Colonel D. McNEIL CAMPBELL, R.E., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 5th January 1892, No. 3 E.I.

In submitting the enclosed copy of the completion report and the Examiner's endorsement, No. 7857, dated 16th December 1891, on the letter from the Executive Engineer, Tanjore division, I have the honour to request that the sanction of Government may be obtained to the excess of Rs. 556 over estimate of Rs. 4,600 sanctioned in G.O., No. 20 I., dated 9th January 1890, for improving the Vaduvagudi surplus weir on the Cauvery left bank.

2. The outlay in excess of estimate requires the sanction of Government, being beyond the Examiner's power of disposal under Code para. 352 C.

3. The cause of excess is fully explained in the completion report by the Executive Engineer.

Order—dated 21st January 1892, No. 63 I., Public Works.

The Examiner of Public Works Accounts is authorized to pass the excess expenditure of Rs. 556 incurred on the work "Improving the Vaduvagudi surplus weir, Cauvery left bank."

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle, with two enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 21st.

Recd. *Encl.*

G.O., 21st Jan. 1892, No. 63 I.

JANUARY.

Vaduvagudi Surplus Weir

The Examiner, Public Works Accounts, authorized to pass the excess expenditure of Rs. 556 incurred on improving the —, Cauvery left bank, Tanjore division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 5th January 1892, No. 1747 G.D.

I have the honour to bring to your notice that the Executive Engineer, Western division, Godávari, has incurred an excess outlay on the following works sanctioned during 1890–91 under 42. Major Works (Working Expenses) "Maintenance and repairs" and to request that you will be so good as to obtain the necessary sanction of Government authorizing the Examiner, Public Works Accounts, to admit the excess outlay incurred :—

Names of works.	Amount of sanctioned estimate.	Excess outlay.	Causes of excess as entered in the completion reports.
	RS.	RS.	
1. Maintenance of Attili canal for 1890–91 ..	3,800	2,289	Excess was due to expenditure incurred on certain works sanctioned but not included in the maintenance scheme for 1890–91 which was not revised, being too late.
1. Do. of Undi do. do ..	3,800	1,252	
1. Do. of Venkiah and Weyern canal for 1890–91.	11,200	820	
1. Do. of Amalapur canal for 1890–91 ..	3,500	1,292	
1. Do. of Bank canal, Central delta, for 1890–91.	8,200	2,104	

Order—dated 21st January 1892, No. 64 I., Public Works.

The Examiner of Public Works Accounts is authorized to pass the excess expenditure incurred during 1890–91 on maintenance and repairs of the canals of the Godávari Western delta referred to in the foregoing letter.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle, with seven enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 21st.

Recd. *Encl.*

G.O., 21st Jan. 1892, No. 64 I.

JANUARY.

Godavari Western Delta

The Examiner, Public Works Accounts, authorized to pass certain excess outlay incurred during 1890–91 on maintenance and repairs of the canals of the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 18th December 1891, No. 2308 K.S.

I have the honour to forward, herewith, general and classified abstract estimates, amounting to Rs. 6,720, for excavating Veeravalli channel at 22 miles 36 chains, Ellore canal, and to request that sanction of Government may be obtained for the same in lieu of Rs. 4,000 provided for Puttagunta channel in the classified abstract estimate (*vide* items Nos. 405, 416 and 440), printed in Proceedings of the Madras Government No. 577 I., of 1st October 1888, the excess, viz., Rs. 2,720, being met from the balance for unforeseen works of the Kistna delta system at disposal of Government.

2. The necessity for the work is explained in the report, which accompanies the estimate.

Enclosure.

Report to accompany estimate for Veeravalli channel, 22 miles 36 chains, Ellore canal, right bank.

In the original project estimate of Major Campbell, a channel, called Puttagunta channel, to take off at 21 miles 47 chains, is provided.

As explained in detail report of the existing state of irrigation on the Ellore canal, the most suitable arrangement is to have a channel taking off at 22 miles 36 chains, as now proposed.

2. At present there exists—

	ACRES.
A masonry sluice, called Ampapuram sluice, at 21 miles 4½ furlongs, irrigating ...	120
A masonry sluice, called Veeravalli sluice, at 22 miles 3½ furlongs, irrigating ...	1,293
A box sluice at 22 miles 6½ furlongs, irrigating ...	57
Total ...	1,470

From which there are no distributary channels.

The estimate now submitted will supply the whole area from one head. There will be one main channel and a right side channel which will be regulated by means of a box sluice in the right bank of the channel.

3. The survey plan and sections will explain all the details in connection with the scheme.

(Signed) W. JOPP,
Ex. Engr., Eastern division, Kistna.

11th December 1891.

Order—dated 21st January 1892, No. 65 I., Public Works.

The following estimate, amounting to Rs. 6,720, for excavating Veeravalli channel at 22 miles 36 chains, Ellore canal, Kistna Eastern delta, is sanctioned in

lieu of the provision of Rs. 4,000 made for the Puttagunta channel in the classified abstract estimate, printed in Proceedings of the Madras Government No. 577 I., dated 1st October 1888 (*vide* items 405, 416 and 440), the excess of Rs. 2,720 being met from the balance of the lump sum provided for unforeseen works which will then be reduced to Rs. 2,09,010 :—

Major Works (Construction).
49. Irrigation.
Kistna Delta System.
Eastern Section.
I. Works.
Ellore Canal.
(3) Distributaries.
Excavating Veeravalli Channel.
B. Land.

	RS.	RS.	RS.
1. Compensation for land	1,640		
		1,640	
C. Works.			
2. Head sluice	880		
3. Drop No. 1 at 0 mile 2 furlongs	320		
4. „ „ 2 at 0 „ 6 „	320		
5. „ „ 3 at 1 „ 2 „	290		
6. Field masonry sluice, No. 1	190		
7. „ „ „ 2	210		
		2,210	
L. Earthwork.			
8. Excavation of channel	1,710		
9. Box sluices and palmyra spouts	280		
		1,990	
O. Miscellaneous.			
10. Demarcation stones	140		
		140	
			5,980
Right Side Channel. B. Land.			
11. Compensation for land	410		
			410
L. Earthwork.			
12. Excavation of channel	280		
13. Palmyra spouts	20		
			300
O. Miscellaneous.			
14. Demarcation stones	30		
			30
Total estimate ...			6,720

2. This sanction is registered as No. 181 I. of 1891–92.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle, with enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 21st.

Recd. *Encl.*

G.O., 21st Jan. 1892, No. 65 I.

JANUARY.

Veeravalli Channel

Estimate of Rs. 6,720 for excavating — at 22 miles 36 chains, Ellore canal, in the Kistna district, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

Telegram from the Secretary to the Government of India, Public Works Department, to the Joint Secretary to the Government of Madras, Public Works Department, Irrigation Branch, dated Calcutta, 18th January 1892, No. 10 A.I.

Your telegram 15th. Additional grant 22,000 sanctioned under 42.

Order—dated 21st January 1892, No. 66 I., Public Works.

The additional grant of Rs. 22,000 sanctioned under 42. Major Works (Working Expenses) is appropriated as shown below :—

	RS.	RS.
Godávari Delta. Eastern Division.		
Extensions and improvements	4,000	
Maintenance and repairs	8,000	
Establishment	2,760	
Tools and plant	3,550	
		18,310
Kistna Delta. Gudiváda Division.		
Extensions and improvements	3,000	
Establishment	690	
		3,690
Total ...		22,000

2. The following deferred telegrams will be sent—

To the Superintending Engineer, I Circle.

Your No. 1619 G.D., 9th ultimo, additional grants for Eastern division. Rs. 4,000 for Extensions and improvements, Rs. 8,000 Maintenance and repairs, Rs. 3,550 Tools and plant, sanctioned.

To the Superintending Engineer, II Circle.

Your No. 2359 K.S., 31st ultimo. Additional grant Rs. 3,000 for Gudiváda division under Extensions and improvements, sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, I Circle.
,, ,, ,, II ,,
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 21st.

Recd. *Encl.*

G.O., 21st Jan. 1892, No. 66 I.

JANUARY.

Funds

The additional grant of Rs. 22,000 sanctioned by the Government of India under 42. Major Works (Working Expenses) appropriated.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

Report of progress of works in No. II Periyár division for the month of December 1891.

Owing to the prevalence of cholera little work has been done, the expenditure being only Rs. 14,773 from the 1st to the 19th of the month when the Christmas holidays commenced and no payments could be made.

2. *Earthwork, 1st—20½ miles.*—The contractor for the earthwork in the first reach was working with about 100 coolies, not quarter enough if he intends to finish by the 15th of June.

First reach, 7⅜ miles.

A few coolies, about 300, were working in closing up the gaps in the second, third and fifth reaches and sectioning the banks ; earthwork in these reaches will be completed by the end of the official year.

Second reach	from	7⅜	miles	to	10	miles.
Third	"	"	10½	"	17	"
Fifth	"	"	18¼	"	20½	"

3. *Masonry, 1st—20½ miles.*—The head works and Ramrajapuram surplus sluice only require finishing up.

Regulator, second reach.—This has been pushed on and the piers and abutments are now brought up to an average of 4 feet above the floor.

No other masonry work was in progress in the first five reaches, but they will all be completed by the end of the official year, except a culvert in the 19th mile.

4. *Sixth reach* (20½ *miles*—24).—The earthwork has been pushed on and may be completed by the end of the March if funds are available.

The stone arch rings of the superpassage at Kudikal odai have been turned, but the intervening space has not yet been filled with concrete. The materials are ready and the arch will be finished before the end of January 1892 and the whole work will be completed in March.

5. *Seventh, eighth, ninth and tenth reaches.*—The earthwork is nearly completed and the banks are being sectioned. The masonry works cannot be resumed until the end of this month owing to heavy springs in the channel and foundation pits.

Seventh reach	from	24	miles	to	26⅜	miles.
Eighth	"	"	26⅜	"	27½	"
Ninth	"	"	27½	"	29	"
Tenth	"	"	29	"	30½	"

6. *Branch channels.*—Some progress was made with the earthwork in the fourth, fifth and sixth branch channels, but the masonry has not been resumed. It will be after the Pongal holidays (13th and 14th of January).

The ninth branch channel, the largest as regards area to be cultivated, has been marked out for a distance of 9 miles and the plans of the masonry works are under revision.

7. The average daily number during the month of labours of all sorts employed on the main and branch channels was 1,400.

(Signed) G. P. CARLESS,
Executive Engineer.

No. 604 P.R.

Copy submitted to the Chief Engineer, Public Works Department.

(Signed) W. HUGHES,
Superintending Engineer, VI Circle.

16th January 1892.

Submitted for the information of Government.

(Signed) J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

ORDER—dated 23rd January 1892, No. 69 I., Public Works.

Recorded and communicated to the Government of India.

(Here enter No. 70 I., Public Works, dated 23rd January 1892.)

(True Extract)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, VI Circle.
,, Revenue Department.

ENDORSEMENT—dated 23rd January 1892, No. 70 I., Public Works.

Copy of the above forwarded to the Government of India.

(By Order.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

IRRIGATION

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 23rd.

Recd. *Encl.*

G.O., 23rd Jan. 1892, Nos. 69, 70 I.

JANUARY.

Progress Report of Works, No. II Periyar Division

Forwarding copy of Proceedings passing orders on the — for December 1891.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

STATEMENT showing the surrenders and demands under Irrigation in the Salem division.

Division.	Item number.	Name of work.	Amount of estimate.	Number and date of sanction.	Outlay to end of March 1891.	Outlay in the current year up to November 1891.	Balance of estimate.	Existing grant for 1891–92.	Proposed increase or decrease.	Revised or proposed grant.	Remarks.
		43. MINOR WORKS AND NAVIGATION.	RS.		RS.	RS.	RS.	RS.	RS.	RS.	
		WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.									
		Major Works.									
Salem.	1	Constructing an anicut and improving the channel to supply the Sanganbasavam tank in connection with the Marandahally project.	17,000	G.O., No. 251 I., dated 25th April 1890.	1,596	1,446	13,958	5,554	**1,000**	4,554	Anicut and sand sluice not yet started; hence it is not possible to utilize the grant in full before 31st March 1891.
	2	Restoring the Appanasamudram anicut across the Vasistanadi river.	5,380	G.O., No. 695 I., dated 8th Sept. 189..	..	..	5,380	3,400	**2,400**	1,000	It has not been possible to do more than collecting the materials for the work up to date; hence the impossibility of spending the grant in full before the close of the year.

No. 4 E.I.

Forwarded to the Chief Engineer for Irrigation with a request that he will be good enough to obtain the orders of Government to the re-arrangements of grants shown in the above statement.

COIMBATORE, 9th Jan. 1892. (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E., Superintending Engineer, IV Circle.

Telegram from the Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 15th January 1892.

Executive Engineer, Buckingham Canal, wires famine coolies flocking canal works. Extra grant Rs. 5,000 under Capital necessary already. Please wire direct whether it can be granted.

No. 9 I.

Submitted to Government, with the recommendation, that the amount surrendered by the Superintending Engineer, IV Circle, be appropriated to meet in part the demand for the Buckingham canal.

CHEPÂK, 19th January 1892. (Signed) W. C. LEWIS, *for* Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 27th January 1892, No. 74 I., Public Works.

The following transfers of funds are sanctioned :—

Provincial.
43. Minor Works and Navigation.

From
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Salem Division.

	RS.
Sanganbasavam tank anicut and improvements to the supply channel ...	1,000
Appanasamudram anicut across the Vasistanadi restoration	2,400
Establishment	782
Tools and plant	51
Total ...	4,233

To
Minor Works for which Capital and Revenue Accounts are kept.
Buckingham Canal.
Capital Account.

	RS.
Works	3,441
Establishment	792
Total ...	4,233

2. There are no funds available at present to meet the balance of the demand.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" " " IV "
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1891} Madras.

PUBLIC WORKS.

Dated January, 27th.

Recd. *Encl.*

G.O., 27th Jan. 1892, No. 74 I.

JANUARY.

Funds

Sanctioning certain transfers of — for the Buckingham Canal division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From R. G. MACDONALD, Esq., Officiating Deputy Secretary to the Government of India, Public Works Department (Account—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Calcutta, 11th January 1892, No. 7 A.I.

In reply to your letter No. 959 I., dated 16th December 1891, forwarding, for information, a copy of the Proceedings of the Government of Madras No. 958 of the same date, I am directed to state that the sum of Rs. 61,500 therein surrendered from the current year's grant for the Rushikulya project has been withdrawn.

2. With this reduction the grant under 35. Construction of Protective Irrigation works will stand at Rs. 6,39,500.

ORDER—dated 27th January 1892, No. 75 I., Public Works.

Communicated to the officers concerned for information.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1891} Madras.
PUBLIC WORKS.

Dated January, 27th.

Recd. *Encl.*

G.O., 27th Jan. 1892, No. 75 I.

JANUARY.

Funds

Letter from the Government of India withdrawing the sum of Rs. 61,500 surrendered from the current year's grant for the Rushikulya project, communicated to officers concerned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 19th December 1891, No. 1191 G.N.

I have the honour to submit, herewith, an estimate, amounting to Rs. 1,250, for constructing a bridge to carry Aska-Russellkonda road, over the diversion of Adóni nalla, connected with the Mahánadi canal, Rushikulya project, and to request that you will be so good as to obtain the sanction of Government to the same.

2. The Executive Engineer states that the work has been ordered to be put in hand in anticipation of sancton, as it affects the progress on aqueduct No. 17, Mahánadi canal, and I have approved his action.

ENCLOSURE.

REPORT on constructing a bridge to carry Aska-Russellkonda road over the diversion of Adóni nalla.

	RS.
Estimate	1,250

This bridge is designed to carry the Aska-Russellkonda road over the Adóni nalla, which has to be diverted in connection with the alignment of the Mahánadi canal and construction of aqueduct No. 17. The general arrangement has already been approved by the Chief Engineer for Irrigation (*vide* his Inspection Notes, 7th March 1891, No. 218 I., Public Works, page 3, para. 5). The Local Fund Board were requested in my No. 326, dated 13th May 1891, to contribute towards the cost of the new bridge. The Board declined to contribute anything and communicated their Resolution in their No. 1303, dated 4th October 1991.

2. All the Local Fund bridges on the Aska-Russellkonda road are of wood. There is no reason why any more expensive material should be adopted by us. A sâlwood bridge on rubble piers is therefore designed. It is estimated to cost Rs. 1,250. The amount provided in the revised estimate of the project is Rs. 1,500.

3. The work has been put in hand in anticipation of sanction, as its progress is associated with that of aqueduct No. 17 and bridge at 11·05 miles, Mahánadi canal, already sanctioned.

4. It is worth considering, on the score of economy, whether similar bridges might not with advantage be constructed wherever bridges are provided on the Mahánadi canal.

5. The revised estimate provides two arches of 20 feet span. This is unnecessarily large. Three of 10-feet span each provide ample waterway.

(Signed) W. C. DEMORGAN,
Executive Engineer.

7th December 1891.

No. 8 I.

Note by the Chief Engineer for Irrigation.

The estimate is recommended for sanction.

2. With reference to this work it was said in inspection notes with Proceedings of the Madras Government, No. 218 I., dated 7th March 1891, the Local Fund ought to contribute, as the existing work over the nalla is insufficient in size and in a positively dangerous state of disrepair. The Local Fund Board should be addressed on the subject and arrangements made for it to take over the new bridge immediately after construction and maintain it thereafter.

CHEPÂK,
16th January 1892.

(Signed) W. C. LEWIS,
for Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 27th January 1892, No. 76 I., Public Works.

The following estimate, amounting to Rs. 1,250, for constructing a bridge to carry Aska-Russellkonda road over the diversion of Adóni nalla, is sanctioned in lieu of the sum of Rs. 1,500 provided for the work in the revised estimate for the Rushikulya project, printed in Proceedings of the Madras Government, No. 482 I., dated 4th September 1890, the saving of Rs. 250 effected by the present estimate being added to the amount reserved for unforeseen works, which will then be increased to Rs. 78,922 :—

Famine Relief and Insurance.
35. Protective Irrigation Works.
Rushikulya Project.
I. Works.
(2) Main Canals and Branches.
Mahánadi Canal.
G. Bridges.

	RS.
Constructing a bridge, estimate	1,250

2. This sanction is registered as No. 182 I. of 1891–92.

3. The Superintending Engineer will give attention to the remarks of the Chief Engineer for Irrigation in para. 2 of his "note" above printed.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, I Circle, with three enclosures.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 27th.

Recd. *Encl.*

G.O., 27th Jan. 1892, No. 76 I.

JANUARY.

Aska-Russellkonda Road

Estimate of Rs. 1,250 for constructing a bridge to carry — over the diversion of Adóni nalla connected with the Rushikulya project, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

Telegram from the Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 22nd January 1892.

Your telegram 21st. Rs. 3,000 required under Maintenance repairs.

Order—dated 28th January 1892, No. 78 I., Public Works.

The allotment of Rs. 3,000 sanctioned for the Gudiváda division in G.O., No. 66 I., dated 21st January 1892, is transferred from Extensions and Improvements to Maintenance and Repairs.

2. The following deferred telegram will be sent to the Superintending Engineer, II Circle :—

"Your telegram, 22nd instant. Rs. 3,000 transferred from Extensions and Improvements to Maintenance and Repairs."

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated January, 28th.

Recd. *Encl.*

G.O., 28th Jan. 1892, No. 78 I.

JANUARY.

Funds

Orders on the transfer of certain —, sanctioned for the Gudiváda division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

TABULAR STATEMENT OF MISCELLANEOUS PROCEEDINGS AND MATTERS OF ROUTINE.

IRRIGATION.

FOR THE MONTH OF JANUARY 1892.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Mr. Ashe.—The criminal prosecution of — for attempt at cheating, sanctioned.	1st Jan. 1892, No. 1 I.	......
Lands.—Notification for acquisition of certain — for Cheyár anicut channel purposes in Devanatham village, Wandiwash taluk, North Arcot district, ordered to be published in the *Fort St. George Gazette.*	4th Jan. 1892, No. 16 I.	14th Feb. 1891, No. 127 I. 14th Feb. 1891, No 128 I. 18th Feb. 1891, No. 145 I. 8th Nov. 1891, No. 91 IV-N.A.
Lands.—Notification for acquisition of certain — for the deposit of silt in connection with the Kávéripák main channel, North Arcot district, ordered to be published in the *Fort St. George Gazette.*	5th Jan. 1892, No. 18 I.	22nd Nov. 1889, No. 63 V-N.A.
Lands.—Notification for acquisition of certain — for Periyár Project works, ordered to be published in the *Fort St. George Gazette.*	5th Jan. 1892, No. 19 I.	......
Tank Restoration Works.—Proceedings of the Revenue Department communicating to the Accountant-General the amount of the increase of revenue due to — for 1888–89 and 1889–90, communicated to the Chief Engineer for Irrigation.	6th Jan. 1892, No. 20 I.	21st Sept. 1891, No. 731 I. 19th Oct. 1891, No. 4579 C. 4th Dec. 1891, No. 5452 C. 19th May 1891, No. 420 I. 4th Aug. 1891, No. 618 D. 6th Oct. 1891, No. 773 I.
Progress reports of Nos. I and II Periyar Divisions for November 1891.—Ordered that copies of the —, be forwarded to the Government of India.	7th Jan. 1892, No. 22 I.	14th Nov. 1891, No. 879 I. 2nd Dec. 1891, Nos. 923-4 I.
Forwarded	7th Jan. 1892, No. 23 I.	......

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Provincial Contract.—Ordered that the Government of India be requested to state whether a programme of Tank Restoration works is still desired to be submitted under the proposed arrangement in the new —.	7th Jan. 1892, No. 24 I.	2nd Sept. 1887, No. 2360, W. 22nd May 1890, No. 296 I. 1st Dec. 1891, No. 1262 Finl.
Addressed accordingly	7th Jan. 1892, No. 25 I.	......
Season, Kurnool—Proceedings, Revenue Department, regarding the state of — for November 1891, recorded.	8th Jan. 1892, No. 28 I.	......
Lands.—Notification for acquisition of — in the village of Ambigapuram, Chidambaram taluk, required for constructing an inspection shed, ordered to be published in the *Fort St George Gazette.*	9th Jan. 1892, No. 29 I.	......
Lands.—Notification for acquisition of — required for surveying purposes in connection with the Muthekolam project, Coimbatore district, ordered to be published in the *Fort St. George Gazette.*	9th Jan. 1892, No. 30 I.	20th Oct. 1891, No. 813 I.
Lands.—Notification for acquisition of — required for improvements to an escape in Ellore canal, Kistna district, ordered to be published in the *Fort St. George Gazette.*	9th Jan. 1892, No. 31 I.	......
Godávari Delta "Completion Project."—Ordered that twenty-five additional sets of the index maps which accompanied the report of the Chief Engineer for Irrigation on the closing of the construction estimate of the —, be forwarded to the Government of India.	11th Jan. 1892, No. 32 I.	23rd April 1891, No. 365 I.
Forwarded	11th Jan. 1892, No. 33 I	......
Lands.—Notification for acquisition of — for the excavation of the Vadapalem irrigation channel, Godávari district, ordered to be published in the *Fort St. George Gazette.*	11th Jan. 1892, No. 36 I.	......
Masonry beams.—Ordered that one copy of the printed correspondence which accompanied the letter from the Government of the North-West Provinces regarding experiments made on the strength of — in the Nadrai Aqueduct Division, Lower Ganges canal, be forwarded to the Superintendent, Periyár Project Works, and one copy circulated to Superintending Engineers.	12th Jan 1892, No. 38 I.	2nd Mar. 1889, Nos. 111, 112.
Letter to the Government of the North-West Provinces acknowledging the receipt of the above.	12th Jan. 1892, No. 39 I.	......
Parathipatti tank.—Proceedings, Board of Revenue, requesting that repairs to the — may be carried out by the Public Works Department as a relief work, communicated to the Superintending Engineer, IV Circle.	14th Jan. 1892, No. 40 I.	......

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Lands.—Notification for the acquisition of certain — in Nilangarai, Saidápet taluk, required for the Buckingham canal, ordered to be published in the *Fort St. George Gazette.*	14th Jan. 1892, No. 41 I.	.. ...
Revenue Report of Irrigation Works in Punjab for 1890–91.—Letter from the Government of India forwarding the —, communicated to the Chief Engineer for Irrigation.	14th Jan. 1892, No. 42 I.	15th Mar. 1890, No. 172 I. 2nd Feb. 1891, No. 91 I.
Minor Irrigation works.—Proceedings of the Revenue Department relative to the progress reports of — up to end of September 1891, recorded.	14th Jan. 1892, No. 43 I.	5th Aug. 1891, No. 610 I. 9th Dec. 1891, No. 935 I.
Administration Report.—Proceedings, Revenue Department, communicating to the Board of Revenue Public Works Government Order forwarding 40 copies of the —, Irrigation Branch for 1890–91, recorded.	15th Jan. 1892, No. 45 I.	30th Nov. 1891, Nos. 918-19 I.
Budget estimates.—Proceedings, Revenue Department, reviewing the — of the Irrigation Cess Fund for 1892–93, communicated to the Superintending Engineers, III and IV Circles.	16th Jan. 1892, No. 53 I.	3rd April 1891, No. 928 W. 10th April 1891, No. 323 I.
Errata in para. 1 of G.O., No. 940 I., dated 9th December 1891, and No. 985 I., dated 19th December 1891.	21st Jan. 1892, No. 59 I.	......
Erratum in para. 1 of G.O., No. 805 I., dated 19th October 1891.	21st Jan. 1892, No. 60 I.	......
Lands.—Notification for acquisition of — required for the excavation of the Vadapalem irrigation channel, Godávari district, ordered to be published in the *Fort St. George Gazette.*	22nd Jan. 1892, No. 67 I.	......
Lands.—Notification for acquisition of — in the village of Yakannur, Núzvíd taluk, Kistna district, required for a drain, ordered to be published in the *Fort St. George Gazette.*	22nd Jan. 1892, No. 68 I.	......
Tidal canal from Masulipatam to Manginapudi factory.—Proceedings, Revenue Department, sanctioning the construction of a —, communicated to the Superintending Engineer, II Circle, for preparation of necessary plans and estimates.	26th Jan. 1892, No. 71 I.	24th Oct. 1891, No. 821 I.
Tanks irrigating not more than 50 *acres.*—Proceedings, Revenue Department, recording Board's Proceedings regarding its report of the financial effect of abandoning all — by the beginning of next month, recorded.	26th Jan. 1892, No. 72 I.	......
Lands.—Notification for acquisition of — in the village of Atmakúr, Nellore district, required for constructing flood embankment to Vasili tank, ordered to be published in the *Fort St. George Gazette.*	26th Jan. 1892, No. 73 I.	......
Minor Irrigation works.—Proceedings, Board of Revenue, reviewing the progress reports of — up to end of November 1891, recorded.	27th Jan. 1892, No. 77 I.	5th Aug. 1891, No. 610 I. 9th Dec. 1891, No. 935 I. 14th Jan. 1892, No. 43 I.